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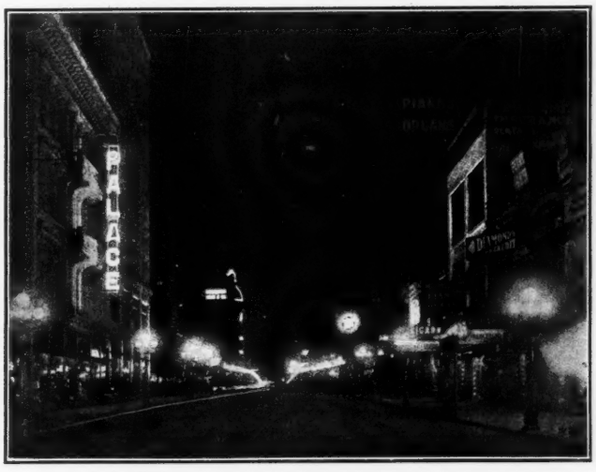
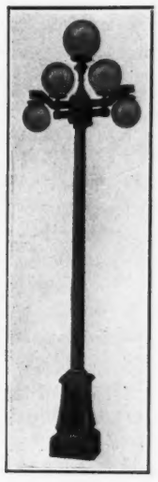
Des Moines, Ia.



Nicollet Avenue, Minneapolis, Minn.



Seattle, Wash.

STREET ILLUMINATION AS AN ADVERTISEMENT

Brilliant Lighting and Ornamental Standards Attract Business and Advertise the City—What is Done by Minneapolis—Spokane, Denver, Seattle, Los Angeles, San Francisco, Oklahoma City, and Others

THE ornamental and abundant illumination of business streets, as an advertisement of a city at large and especially of the merchants along such streets, is being adopted more and more generally throughout the country. Several instances of this have already been described by us. The common plan appears to be to have the merchants themselves combine into an improvement organization by blocks or other districts and furnish the lighting standards; the current being paid for sometimes by the merchants, sometimes by the city, and sometimes jointly.

Minneapolis takes the greatest pride in the lighting of Nicollet Avenue, which was begun in 1908 by placing ornamental standards between Second and Ninth streets. This lighting was done under the direction of the lighting committee of the Publicity Club, 64 posts being erected and going into service on June 20, 1908. This was at once so popular with the public and apparently was such good advertisement for the merchants that the plan was extended and about 300 are now in use, and the contract was signed two or three weeks ago for 104 more, and the Publicity Club expects to have more than 500 burning in the downtown district before summer.

These lamps are erected, equipped and maintained for one year by the Publicity Club, after which they are handed over to the city and maintained from the general lighting fund. The standards are paid for by the property abutting on the street so lighted. Where there are vacant properties or properties in litigation from which no assessments can be collected, these are carried by the general fund; but where large property owners refuse to subscribe they are left unlighted as far as possible. The funds for each street are kept separate, and $3.25 per front foot is collected for this purpose. If an over amount is subscribed for any street the balance is returned pro rata to the subscribers. The amount is paid sometimes by the owner, sometimes by the tenant, and in other cases on the basis of $2 from the owner and $1.25 from the tenant.

The posts consist of Corinthian columns on an ornamental pedestal and surmounted by horizontal cross-arms carrying four lamps, a fifth lamp being carried directly above the post and slightly higher than the others. The four outside globes are 12 inches in diameter and the center globe 16 inches in diameter. The posts are 14 feet high, are of cast-iron, and each weighs 1,100 pounds. Each post consists of seven castings held together by concealed bolts and screws. The base has been set in concrete to prevent vibration, which is harmful to the tungsten lamps. The lighting standard used at Minneapolis is modeled somewhat after the Los Angeles standard, which was described by us some time ago.

Each post is equipped with five 100-watt tungsten lamps of 80 candle-power each. The center light burns all night, an average of ten hours; the other four burn until 12 o'clock. The five lamps consume a total voltage of 90 kw-hours per month. It is estimated that the same candle-power illumination created by ordinary carbon lamps uses 180-kw-hours per month. The tungsten lamps have a life of 900 hours, as against

MINNEAPOLIS

400 hours for the carbon lamps, and the cost of lamp renewals is practically the same in each case.

The tungsten lamps are of General Electric manufacture and are in an upright rather than a pendant position. The lighting system takes current from an Edison three-wire, direct-current, 112-volt underground circuit, the wires being carried to the posts in lead-sheathed cables. By a three-way switch all of the lamps are lighted at one turn, another turns out the four on the cross-arms, and the third turns out the center lights.

The cost of the Minneapolis standard is $65 and that of the electrical equipment, including the large opalescent globes and the tungsten lamps, is $48; making a total of $113 for the post. These posts are placed eight to a block, four on each side of the street. The first post from each corner is placed 16 feet back from the property line and the remainder at equal intervals along the block, about 100 feet apart.

St. Paul uses a lamp similar to the one in Minneapolis except that the four globes on the cross-arms are pendant rather than upright. An objectionable feature of this has been found to be the breakage by vehicles running against the inverted globes. This arrangement, however, has the effect of lighting the sidewalk better than the upright globe, while the upright is said to afford better illumination of the buildings themselves.

One matter that should be kept prominently in mind in selecting standards for ornamental lighting, or, in fact, for any street lighting, is that the posts form a part of the street ornamentation during more hours of day light and for more people during daylight than when lighted at night. Therefore, attention should be paid to the artistic appearance of the standard and globes, as they will appear during the day. The Minneapolis posts meet this requirement exceptionally well, and, fortunately, most of the cities are making efforts, generally successful, to meet this same requirement. Perhaps the latest effort at artistic and well-constructed standards is that recently adopted for Spokane, Wash. A special effort has been made to make this standard typical of Spokane—something peculiarly adapted to their own use. Thus the "S" on each side of the base is the "Made in Spokane" trade mark. Spokane calls itself the "Water Power City," and the Hippocampus, or seahorse, just under the cross-arms is the emblem of water-power and, incidentally, an omen of health and prosperity. In order to protect this post for the use of Spokane exclusively, the design has been patented. Not only were these details fully considered, but the height and spread of the globes were proportioned to the width of the street and the height of the store windows to be illuminated. The standard or electrolier is finished in antique green bronze. This post was designed and is manufactured by the Gilmore-Goodwin Engineering Company, of Spokane.

ARCHES IN SOUTH BEND, IND. 25-WATT TUNGSTEN LAMPS

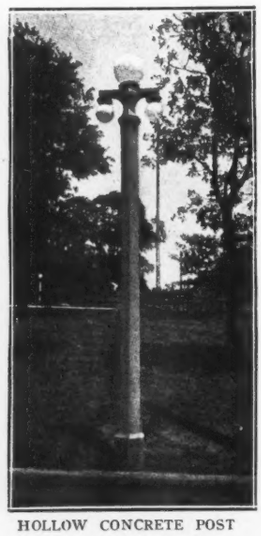
A very neat post of light design, but otherwise suggestive of the arts and crafts products, is that used in Seattle, Wash. This post, like the others, has five lights, but these are placed in one vertical plane. San Francisco has used several styles of posts, one known as the Bear type, carrying a small bear on the end of each cross-arm, which bears are utilized to hold flag standards for decorative purposes during celebrations. Another, known as the Eagle type, carries an eagle above the central globe. Neither of these is, to our mind, as pleasing in appearance as the designs previously referred to.

Concrete posts have recently been adopted in several cities, one used in certain of the Chicago parks having been illustrated by us in the issue of Sept. 15, 1909. Oklahoma City, Okla, uses a hollow concrete post capped with a heavy ornamental copper top and globe holders. This carries a 100-watt tungsten lamp at the top and a 60-watt tungsten lamp pendant from each of two arms.

We have from time to time presented photographs of a number of lighting arches used in several cities, but probably that at South Bend, Ind., is the most striking in appearance of any of these, each arch being almost a complete semicircle.

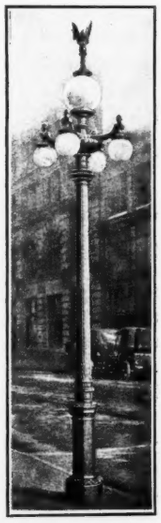
Denver, Col., like at least a half-dozen other cities, claims the distinction of being the best and most artistically lighted city in the world. Three of the streets in its business section are brilliantly lighted, and a number of others are provided with more than the usual illumination. Perhaps the most striking feature is the "Welcome" arch spanning the street at the Union Depot. At the inauguration of the lighting project the tramway company and the electric light company both co-operated, the former in furnishing the poles and the latter especially in working up the plans. On Sixteenth Street, the first to be brilliantly lighted, all wires were placed underground before beginning work, except those used by the trolleys. The poles supporting the trolley wires were utilized as light standards, the original poles being covered by cast-iron casings which were sufficiently large to conceal the slight departure of these poles from the vertical. These castings are two feet square and 27½ feet high, carrying the trolley wire supports at a point 8 feet from the top, and a few feet further down arms of wrought-iron scroll work, one extending over the roadway and the other over the sidewalk, which carry opal arc globes. The sidewalk globe, however, is not lighted, but is placed merely for effect. These poles are spaced four to a block on each side of the street.

LOS ANGELES



HOLLOW CONCRETE POST
OKLAHOMA CITY

"BEAR" POST
SAN FRANCISCO



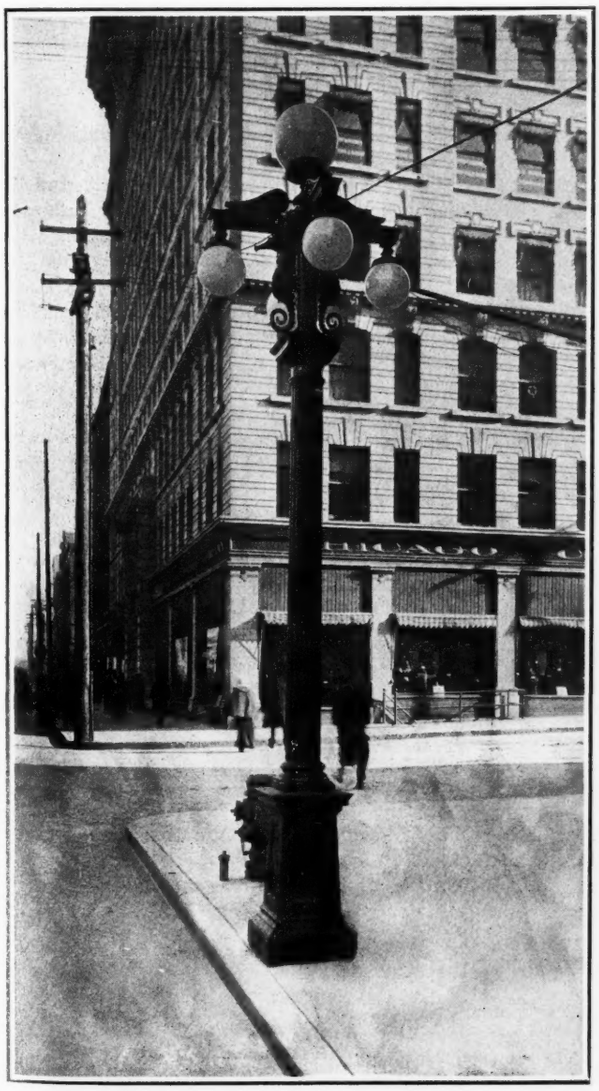
"EAGLE" POST
SAN FRANCISCO

On Fifteenth Street the trolley poles were not encased throughout, but were provided with a decorative base, two collars and a head piece; the two collars having attached to them the upper and lower portions of a a wrought-iron scroll, which carries a single arc lamp, and also at its lower end a 16-c.p. incandescent lamp under a red shade which gives a unique appearance to the street.

On Speer Boulevard Nernst lamps in opal globes are mounted on 10-foot poles, there being no trolley poles on that street. The wires here are placed underground, but are not in conduits, being simply buried in the soil.

During 1909 the Esplanade entrance to the City Park was provided with 70 ornamental light standards carrying tungsten series lamps. On Seventeenth Street 112 poles were set carrying 7½-ampere Westinghouse enclosed arcs. Other streets also have been furnished with more or less brilliant illumination. The ornamental standards in Denver have cost as follows: Seventy at the Esplanade entrance to the city park, $2,190; 123 in Fifteenth Street, $8,291; 112 in Sixteenth Street, $16,559; 112 in Seventeenth Street, $5,881; 75 in Spear Boulevard, $5,079. The "Welcome" arch referred to above contains 1,294 4-c.p. incandescent lights. In addition to the special lighting there are 1,870 arc lights in the city. The monthly cost of the arc lights is $9,380 and that of the special illumination is $3,860 per month.

Among other cities, Galesburg, Ill., and Fort Dodge, Ia., are preparing for display illumination in the immediate future.



SPOKANE'S SPECIAL STANDARD

STANDARD PAVING SPECIFICATIONS

Permanent Committees Appointed by Chicago Convention—Specifications for Brick, Stone Block and Concrete Pavements, Sidewalks and Foundations

THE Chicago convention on Standard Paving Specifications, which was reported in part in last week's issue, adopted, as was there stated, standard specifications for wood block, brick, granite block, asphalt, concrete foundations and pavements and macadam and received the report of the committee upon Bonds and Guarantees and Uniform Bidding Blanks. The standard specifications for wood block were given last week, and are seen to be but slightly modified from the specifications adopted last summer by the city of New York.

It must be apparent that, imporant as was the work performed by this convention, the time was too short and the conditions were unfavorable for a careful preparation of such important standards. The committees were appointed on Monday and were required to report on Wednesday, Thursday and Friday; the city in the meantime furnishing entertainment which occupied quite a little of the intervening time. It was, therefore, quite natural that certain, at least, of the committees should confine their reports largely to an endorsement of specifications previously adopted after more careful consideration by other associations or cities. Thus, the brick specifications are very largely those recommended by the National Paving Brick Manufacturers' Association, the granite block specifications were practically those adopted at the meeting in New York which was reported in our issue of two weeks ago, and the specifications for cement and concrete varying but slightly from those recommended last year by a committee of the Cement Users' Association. This adoption of previous standards was, in our opinion, a very wise proceeding on the part of the several committees, being a recognition by them of the impossibility of making an entirely new study of the matter in the short time at their disposal. Possibly the greatest benefit from this convention is the prominence which has been given to the importance of the matter and the concentration of thought upon it by the engineers of all the larger cities of the country (except Boston, which alone was not represented).

The more or less tentative nature of the reports of the several committees was realized by the convention and was one of the chief arguments for arranging to hold another meeting a year hence to receive further reports from the same committees. Each committee is to continue through the year with five members in place of the ten which constituted the committee during the convention. These committees will undoubtedly be glad to correspond with engineers and others interested and experienced in the several kinds of pavements. The personnel of the permanent committees is as follows:

List of Permanent Committees

ASPHALT—George W. Craig, Chairman, Omaha; Wm. R. Benson, Vice-Chairman, Philadelphia; Charles E. P. Babcock, Buffalo; Lester Kirschbraun, Chicago; George W. Tonson, Toledo.

BITUMINOUS CONCRETE—Linn White, Chairman, Chicago; L. W. Rundlett, Vice-Chairman, St. Paul; L. W. Anderson, Grand Rapids; J. P. Sherer, Milwaukee; George F. McGonagle, Salt Lake City.

BONDS, GUARANTEES AND UNIFORM BIDDING BLANKS—W. J. Hardee, Chairman, New Orleans; H. C. Allen, Vice-Chairman, Syracuse; George H. Norton, Buffalo; R. T. Goodnow, Kansas City; Charles A. V. Standish, Chicago.

CONCRETE—J. H. Weatherford, Chairman, Memphis; Abram Swan, Jr., Vice-Chairman, Trenton; N. E. Murray, Chicago; L. A. Jansen, Milwaukee; Otto H. Klein, New York.

CREOSOTED BLOCK—George W. Tillson, Chairman, New York; Andrew Rinker, Vice-Chairman, Minneapolis; Albert F. Keeney, Chicago; N. S. Sprague, Pittsburg; J. C. Travilla, St. Louis.

MACADAM—J. L. Darnell, Chairman, Kansas City; Wm. H. Brooks, Vice-Chairman, Philadelphia; Walter J. Leininger, Chicago; H. W. Klausmann, Indianapolis; H. R. Peterman, St. Joseph.

PUBLICATION—Felix A. Norden, Chairman, Chicago; A. C. Kugle, Vice-Chairman, Omaha; C. D. Hill, Chicago; Thos. P. Wriggins, Trenton; John C. Ely, Dayton.

STONE BLOCK—B. T. Fendall, Chairman, Baltimore; George S. Smith, Vice-Chairman, New Orleans; Morris R. Sherrerd, Newark; John Minwegen, Chicago; M. F. McKenna, Bridgeport.

VITRIFIED BRICK—Edward H. Christ, Chairman, Grand Rapids; D. M. Roberts, Vice-Chairman, Terre Haute; Henry Maetzel, Columbus; John B. Hittell, Chicago; W. K. Seitz, St. Joseph.

Meantime, in October next, a committee on Standard Specifications of the American Society of Municipal Improvements, with several sub-committees to consider practically the matters dealt with by the Chicago convention, will report to that Society. These sub-committees will undoubtedly be assisted in their investigations by the work of the Chicago convention, and it is to be presumed will use the latter for a starting point for their own study of the several subjects.

We give below the specifications adopted at Chicago for the brick, granite block and cement and concrete. The other specifications and reports we expect to present next week.

Standard Specifications for Brick Pavement

BRICK

All brick must be strictly No. 1 pavers of the size commercially known as block, the widths of which must not vary more than one-eighth of an inch.

They must be thoroughly annealed, tough and durable, regular in size, shape and evenly burned.

When broken, the block shall show a dense stone-like body, uniform in color inside, free from lumps of uncrushed clay, lime, air pockets, cracks or marked laminations. Kiln marks or surface cracks must not exceed 3-16 of an inch in depth.

All blocks so distorted in burning as to lie unevenly in the pavement shall be rejected.

All blocks shall be tested for abrasion and absorption. The limits of loss by abrasion test and amount of absorption to be determined by the Engineer in charge of the work.

The abrasion test shall be made with the rattler recommended by the National Paving Brick Manufacturers' Association and of the following shape and dimensions: A regular fourteen (14) sided polygon, circumscribed around a circle 28 inches in diameter and the barrel to be twenty inches long with one-quarter (¼) inch spaces between each side; and where cast-iron staves are used the Engineer in charge of the work shall require greater loss from abrasion than when steel is used.

NOTE—In view of the fact that the National Paving Brick Manufacturers' Assn. is now considering a modification as to dimensions and materials of the "Rattler" now and for some time in use, your Committee advise that questions touching the "Rattler" be not considered until after the Association have reached a conclusion and made a recommendation as to this appliance.

For the information of the convention, we submit a tentative report on the Rattler made by the National Paving Brick Manufacturers' Assn., together with plans and specifications for rattler and with the suggestions for tests.

All blocks shall be laid on a 6-inch concrete base with sand cushion. The sand cushion shall be clean, sharp sand, spread to a uniform surface to conform to the cross-section of the finished pavement; the sand cushion to be slightly moistened and rolled with a hand roller weighing not less than ten pounds per inch of width. The depth of sand to be not less than 1½ inches nor more than two inches after rolling.

CEMENT FILLER FOR BRICK PAVEMENTS

Your Committee, after considering this matter carefully, beg leave to report the following and recommend its adoption.

The filler shall be composed of one part each of clean, sharp sand and Portland cement. The sand should be dry. The mixture, not exceeding one-third bushel of the sand, together with a like amount of cement, shall be placed in the box and mixed dry, until the mass assumes an even and unbroken shade. Then water shall be added, forming a liquid mixture of a consistency of thin cream.

The sides and edges of the brick should be thoroughly wet before the filler is applied by being gently sprinkled.

From the time the water is applied until the last drop is removed and floated into the joints of the pavement, the mixture must be kept in constant motion.

The mixture must be removed from the box to the street surface with a scoop shovel, all the while being stirred in the box as the same is being thus emptied. The box for this purpose shall be 4 feet 8 inches long, 30 inches wide and 14 inches deep, resting on legs of different lengths, so that the mixture will readily flow to the corner of the box, the bottom of which should be 6 inches above the pavement. This mixture, from the moment it touches the brick, should be thoroughly swept into the joints.

Two such boxes shall be provided in case the street is 20 feet or less in width; exceeding 20 feet in width, three boxes should be used.

The work of filling should thus be carried forward in line until an advance of fifteen to twenty yards has been laid, when the same force and appliances shall be turned back and cover the same space in like manner, except to make the proportions two-thirds Portland cement and one-third sand.

To avoid the possibility of thickening at any point, there should be a man with a sprinkling can, the head perforated with small holes, sprinkling gently the surface ahead of the sweepers.

Within one-half to three-quarters of an hour after this last coat is applied and the grout between the joints has fully subsided, and the initial set is taking place, the whole surface must be slightly sprinkled and all surplus mixture left on the tops of the brick swept into the joints, bringing them up flush and full.

After the joints are thus filled flush with the top of the brick and sufficient time for hardening has elapsed, so that the coating of sand will not absorb any moisture from the cement mixture, one-half inch of sand shall be spread over the whole surface, and in case the work is subjected to a hot summer sun, an occasional sprinkling, sufficient to dampen the sand, should be followed for two or three days.

NOTE—Or, if a stronger filler is desired, pure cement may be used where streets cannot be kept closed long enough to permit cement grout to properly set; or, on account of any other local conditions, a bituminous filler may be used.

ROLLING

After brick in pavements are inspected and the surface is swept clean, the pavement shall then be rolled with roller weighing not less than three nor more than five tons in the following manner: The brick next the curb should be tamped with a hardwood tamper to the proper grade. The rolling will then commence near the curb at a very slow pace and continue back and forth towards the center, until the center of the street is reached, then passing to opposite curb and repeat in the same manner to the center of the street. After this first passing of the roller the pace may be quickened and the rolling continued until each brick is firmly imbedded in the sand cushion. The pavement shall be rolled transversely at an angle of forty-five degrees from curb to curb, repeating the rolling in opposite forty-five-degree direction. Before and after this transverse rolling has taken place, all broken or injured blocks must be taken up and replaced with perfect ones. The substituted blocks must be brought to the true surface by tamping.

Expansion joints shall be placed parallel with and at each of the curb lines, and shall be not less than one inch in width. Said joints shall be filled completely with bituminous cement.

Standard Specifications for Granite Block and Similar Stone Block Pavements

Your Committee in considering this question decided at this time to recommend only certain dimensions and features in regard to the blocks themselves, rather than a complete set of specifications for this form of pavement.

It is believed that the adoption of certain standard dimensions for the blocks will result in having the several quarries improve the output of paving blocks, and enable them to furnish a standard block more expeditiously, and it is hoped at not to exceed the cost which now maintains.

DIMENSIONS OF BLOCKS

1st.—It is recommended that the depth of block be five inches, with an allowable variation of one-quarter inch greater or less in said depth.

2nd.—The blocks shall be so dressed that they can be laid with one-half inch joint for a distance of one inch down from the head, the individual joints to be measured. The joint not to exceed one-half inch at the top nor to be more than one inch in any part of the joint.

3d.—The block to be from eight inches to twelve inches in length.

4th.—The block to be from three and one-half inches to four and one-half inches in width for ordinary conditions, with a suggestion of greater width to be allowed for streets of flat grades; said width to be specified in each individual contract.

5th.—The head of the block shall be so dressed that it shall not have more than three-eighths inch depression from a straight edge laid in any direction across the head and held parallel to the general surface of the block.

The Committee reported that it received very great assistance in reaching its conclusions from gentlemen, not members of the Committee, who were present at all of its meetings, took part in the discussions and offered most valuable suggestions. The gentlemen referred to were Prof. A. N. Talbot and Messrs. D. M. Roberts, John W. Reid, Frederick J. Cellarius and Henry Maetzel.

Standard Specifications for Concrete Work

CEMENT

The cement shall meet the requirements of the standard specifications for Portland cement of the American Society for Testing Materials, adopted August 16, 1909, with Section 21 of said specifications amended to read as follows:

Tensile Strength

The minimum requirements for tensile strength for briquettes one square inch in cross-section shall be as follows; and the cement shall show no retrogression in strength within the periods specified:

Neat Cement

Age	Strength
24 hours in moist air	175 pounds
7 days (1 day in moist air, 6 days in water)	500 pounds
28 days (1 day in moist air, 27 days in water)	600 pounds

One Part Cement, Three Parts Standard Ottawa Sand

Age	Strength
7 days (1 day in moist air, 6 days in water)	200 pounds
28 days (1 day in moist air, 27 days in water)	275 pounds

Provided, however, if the cement fails to meet the requirements of the 24-hour neat test, it may, at the discretion of the Engineer, be held for further tests before being rejected. But in no case shall the increase in strength at 28 days be less than 20 per cent over the strength shown at seven days.

The above specifications for cement apply to all concrete work.

Specifications for Concrete Sidewalks

1.—Cement as above.

FINE AGGREGATE

2.—The fine aggregate shall consist of any material of siliceous, granitic or igneous origin, free from mica in excess of five (5) per cent and other impurities, and shall be of graded sizes ranging from ⅛ inch down to that which will be retained on a No. 80 Standard sieve for the top or wearing surface; and from ¼ inch down to that which will pass a No. 100 Standard sieve for the base.

COARSE AGGREGATE

3.—The coarse aggregate shall be sound gravel, broken stone or slag having a specific gravity of not less than 2.6. It shall be free from all foreign matter, uniformly graded and of sizes that will pass a 1-inch screen and be retained on a ¼-inch screen.

WATER

4.—The water used in mixing the concrete shall be clean, free from oil, acid, strong alkalies or vegetable matter.

BASE PROPORTIONS

5.—In preparing the concrete for the base, the cement and aggregate shall be measured separately, and then mixed in such proportions that the resulting concrete shall contain fine aggregate amounting to one-half of the volume of the coarse aggregate, and that 5½ cubic feet of concrete in place will contain 94 pounds cement.

MIXING

6.—The ingredients of the concrete shall be thoroughly mixed, sufficient water being added to obtain the desired consistency, and the mixing continued until the materials are uniformly distributed and each particle of the fine aggregate is thoroughly coated with cement and each particle of the coarse aggregate is thoroughly coated with mortar.

Where a mechanical concrete mixer is used, the materials must be proportioned dry and then deposited in the mixer all at the same time. The mixer must produce a concrete of uniform consistency and color with the stones thoroughly mixed with the water, sand and cement.

CONSISTENCY

7.—The materials shall be mixed to produce a concrete of such consistency that the water will flush to the surface under heavy tamping.

RE-TEMPERING

8.—Re-tempering, that is, re-mixing with additional water, mortar or concrete that has partially hardened, will not be permitted.

FORMS

9.—The forms shall be smooth, free from warp, of sufficient strength to resist springing out of shape, and of a depth to conform to the thickness of the proposed walk.

All mortar and dirt shall be removed from forms that have been previously used.

The forms shall be well-staked and set to the established lines, their upper edges conforming to the grade of the finished walk, which shall have sufficient fall from the lot line towards the curb line to provide for drainage, but shall not exceed ⅜ inch per foot.

The base shall be blocked out in sections which shall not measure more than six feet in any dimension.

The cross forms shall be of ¼-inch metal, of a depth to correspond to the thickness of the proposed walk, and shall extend full width of the walk and be set at right angles to the side forms. They shall be left in place until the wearing surface is floated.

PLACING CONCRETE

10.—The concrete shall be deposited in a layer on the subgrade in such quantities that, after being thoroughly rammed in place, it will be of the required thickness, and the upper surface shall be true, uniform and parallel with the surface of the finished sidewalk.

In conveying the concrete from the place of mixing to the place of deposit the operation must be conducted in such a manner that no mortar will be lost and the concrete must be so handled that the foundation will be of uniform composition throughout, showing no excess nor lack of mortar in any place.

TOP OR WEARING SURFACE

11.—The top or wearing surface shall be composed of one part Portland cement and two parts fine aggregate, mixed with sufficient water to produce a mortar of a consistency which will not require tamping and which can be easily spread into position with a straight edge.

The mortar for the wearing surface shall be mixed in a mortar box and spread on the base immediately after mixing. In no case shall the wearing surface be placed after the base has set.

After the wearing surface has been worked to an approximately true plane, the slab marking shall be made directly over the joint in the base. Such marking shall be made with a tool which will cut entirely through and completely separate the surface of adjacent slabs.

EDGES

12.—The slabs shall be rounded on all surface edges to a radius of about ½ inch.

TROWELING

13.—The surface shall be troweled smooth. The application of neat cement to the surface in order to hasten hardening is prohibited.

PROTECTION

14.—When completed the walk shall be kept moist and protected from traffic and the elements for at least three days.

Specifications for Concrete Curb and Combined Curb and Gutter

Articles 1 to 9 as above.

PLACING CONCRETE

10.—The concrete shall be deposited in the forms and tamped in place, so that the upper surface shall be true, uniform and parallel with the surface of the finished work.

In conveying the concrete from the place of mixing to the place of deposit, the operation must be conducted in such a manner that no mortar will be lost and the concrete must be so handled that the foundation will be of uniform composition throughout, showing no excess nor lack of mortar in any place.

FACING OR WEARING SURFACE

11.—The facing or wearing surface shall be composed of one part Portland cement and two parts fine aggregate, mixed with sufficient water to produce a mortar of a consistency which will not require tamping and which can be easily spread into position with a straight edge.

The mortar for the facing shall be mixed in a mortar box and spread on the base immediately after mixing. In no case shall the facing be placed after the base has set.

After the facing has been worked to an approximately true plane, the section marking shall be made directly over the joint in the base. Such marking shall be made with a tool which will cut entirely through and completely separate the surface of adjacent sections.

TROWELING

12.—The surface shall be troweled smooth. The application of neat cement to the surface in order to hasten hardening is prohibited.

PROTECTION

13.—When completed the work shall be kept moist for four days and protected from traffic and the elements for at least ten days.

CURB AND GUTTER NOT BUILT IN PLACE

14.—Where built at a point removed from the work, they shall be constructed in the same manner and of the same materials as above specified and shall be allowed to harden for at least ten days before being transported to their position in the work. The length of any section shall not be less than four feet nor more than six feet.

Specifications for Concrete for Pavement Foundations

1.—Cement as above.

FINE AGGREGATE

2.—The fine aggregate shall consist of any material of siliceous, granitic or igneous origin, free from mica in excess of five (5) per cent and other impurities, uniformly graded, the particles ranging in size from ¼-inch to that which will pass a No. 100 Standard sieve.

COARSE AGGREGATE

3.—The coarse aggregate shall be sound gravel, broken stone or slag, having a specific gravity of not less than 2.6. It shall be free from all foreign matter, uniformly graded, and shall range in size

from ¼ inch up, the largest particles not to exceed in any dimension one-half the thickness of the concrete in place.

PROPORTIONS

4.—In preparing the concrete, the cement and aggregate shall be measured separately and then mixed in such proportions that the resulting concrete shall contain fine aggregate amounting to one-half of the volume of the coarse aggregate; and that seven cubic feet of concrete in place will contain 94 pounds of cement.

MIXING

5.—As for cement sidewalks.

CONSISTENCY

6.—The materials shall be mixed wet enough to produce a concrete of a consistency that will flush readily under light tamping, but which can be handled without causing a separation of the coarse aggregate from the mortar.

RE-TEMPERING

7.—As for cement sidewalks.

PLACING CONCRETE

8.—As for cement sidewalks.

PROTECTION

9.—When completed the foundation shall be kept moist for four days, and it shall be protected from traffic until the concrete has thoroughly set before the wearing surface is put on.

Concrete Pavements

Because of lack of experience with this form of pavement, we hesitate to recommend unreservedly the adoption of any specifications for concrete pavement. We believe that this subject should be given further study by the permanent Committee of this Organization.

Your Committee recognizes the fact that there are two or more concrete pavements now in use, on which patents have been obtained. We consider it outside of the jurisdiction of this Committee to pass upon the merits of these pavements. If any municipality should desire to lay any of these patented pavements, specifications should be obtained from the patentee, but the materials used in the work should conform to the requirements of the standard specifications.

We believe that there are conditions where traffic is light, and economy and cost are essential, where a concrete pavement may be used to advantage. In such cases we recommend for your consideration the following specifications:

CEMENT

1.—As above.

FINE AGGREGATE

2.—As for concrete pavement foundations.

COARSE AGGREGATE

3.—The coarse aggregate shall be sound broken stone, trap rock or granite having a specific gravity of not less than 2.6. It shall be free from all foreign matter, uniformly graded and shall range in size from ¼ inch up, the largest particles not to exceed in any dimension one-half the thickness of the concrete in place.

PROPORTIONS

4.—In preparing the concrete the cement and aggregate shall be measured separately, and then mixed in such proportions that the resulting concrete shall contain fine aggregate amounting to one-half of the volume of the coarse aggregate; and that five cubic feet of concrete in place will contain ninety-four pounds of cement.

MIXING

5.—As for cement sidewalk.

CONSISTENCY

6.—As for pavement foundations.

RE-TEMPERING

7.—As for cement sidewalks.

PLACING CONCRETE

8.—The concrete shall be deposited in a layer on the subgrade in such quantities that, after being thoroughly rammed in place, it will be of the required thickness and the upper surface shall be true and uniform.

In conveying the concrete from the place of mixing to the place of deposit, the operation must be conducted in such a manner that no mortar will be lost and the concrete must be so handled that it will be of uniform composition throughout, showing no excess nor lack of mortar in any place.

FINISHING

9.—The pavement shall be finished by thorough-hand-tamping, until the mortar flushes freely to the surface, then lightly tamped with a templet made of 2-inch plank shaped to conform to the curvature of the surface of the finished pavement, and having a length of not less than one-half the width of the roadway, to give a uniform surface with the slight markings thus made transverse to the street.

EXPANSION JOINTS

10.—Expansion joints shall be placed at right angles to the curb line at intervals of fifty feet. These joints shall be not less than one inch wide and shall be filled with creosoted soft wood timber with the grain vertical and extending the full depth of the pavement.

PROTECTION TO WORK

11.—During the first four days after placing, the pavement shall be kept moist and it shall be protected against traffic until the concrete has thoroughly set. In no event shall the pavement be used within ten days after being laid.

ST. LOUIS PUBLIC COMFORT STATION

By ERNEST L. BRADFORD

THE first Public Comfort Station for St. Louis was opened January 7, in the basement of the Court House, which occupies the square bounded by Broadway and Market, Chestnut and Fourth streets. It is the gift of a public-spirited citizen, whose name has not yet been made known, and represents an investment of approximately $13,000. The station has, on the men's side, nineteen compartments, twelve of which are free, the other seven being pay compartments. For a nickel one has the use of a compartment—hot and cold water, soap, towel, wash-bowl and mirror; for a penny, soap and a towel are furnished with the hot and cold water in the lavatories. There are eight urinals of white enamel and seven wash-basins. On the women's side there are nine free and six pay compartments, and, in addition, a rest or retiring room with a matron in charge.

The station has been turned over to the city and will be operated under the supervision of the Public Recreation Commission, at the head of which is the Park Commissioner. This body has also control of playgrounds and public baths.

The city is erecting what will be the second public comfort station at Carr Square; this will be completed in two or three months. It is proposed to erect a third station at the approach to Eads Bridge, a place of constant resort, which is crowded daily.

The necessity of providing such public stations is being realized more and more by observing citizens. The need has been partly met by depots, hotels, office buildings and saloons; but it is scarcely fair to burden these agencies, which have patrons of their own to serve, with the task of furnishing accommodations to the public. That is properly the duty of the city. In European municipalities—Glasgow, Edinburgh, Liverpool, London, Paris, Berlin—public facilities have been provided for years. In America they are already found in the cities of Washington, D. C.; New York, Brooklyn, Baltimore, Cleveland, Detroit, Cambridge, Mass.; Worcester, Holyoke and elsewhere. Their adoption means, as their name indicates, an increase in public comfort.

The installation of these stations in St. Louis is due to the publication, by the Civic League of that city, of an interesting pamphlet on the subject, which may be had by sending 4 cents in stamps to the secretary, Mr. Mayo Fesler, 903 Security Building.

GREENWOOD WATER AND LIGHT PLANT

MR. A. J. SPROLES, Superintendent of the Water and Electric Light Plant of Greenwood, S. C., in his report for the year 1909 shows that since 1907 the plant has furnished to the city services and supplies amounting to $35,752.20 in addition to the amount paid as interest on bonds. No cash is received for services to the city but the amount is entered in the books. Not including this, the net cash revenue for the year 1909 was $7,680. The total receipts for both water and electric current were $20,355.77, a net gain of $1,997.10 over 1908. The supply is obtained from a water shed and a well, but will need to be increased by the boring of another well at once. Moreover, as the plant is not in duplicate, Mr. Sproles strongly recommends the installing of a duplicate pumping plant as well as the new well.

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Readers are invited to contribute to the MUNICIPAL JOURNAL AND ENGINEER, either in the form of special articles or of letters discussing matters of current interest.

It is also desired that the facilities furnished by the reference library in this office should be widely known and freely used by those interested in municipal affairs. Visitors will be welcomed and provided with conveniences for search, and inquiries by mail will be promptly dealt with.

MARCH 9, 1910

CONTENTS.

A New York Metropolitan Sewer District

THE State Legislature of New York in 1906 appointed a Metropolitan Sewerage Commission to study the subject of the pollution of New York harbor by sewage; which Commission was in 1908 reconstituted, its labors to conclude on May 1, 1910.

This commission, which expects to submit a final report next month, has, by analysis of water and sludge, studied the effect upon the waters of the harbor, of the present methods and amounts of sewage discharge and has also investigated the possibility of continuing to discharge increasing amounts of sewage without nuisance. It finds the greatest danger to lie in the proposed trunk sewer for the Passaic valley and that now under construction in the Bronx valley, together with possible trunk sewers for draining still other sections. The Passaic, Rahway and Harlem rivers and Gowanus and Newtown creeks are but little more than open sewers, and need radical steps for their purification.

The Commission believes that it is not possible for the municipalities draining to the harbor, about eighty in number, to combine by mutual agreement merely, but recommends the formation of a Metropolitan district which would have an area of about 700 square miles, about one-half of this in New York and one-half in New Jersey. This district now contains about five million inhabitants, which will undoubtedly be more than doubled by 1940. The area is so cut up by large bodies of water that it is impossible to lead all the sewage to one point for treatment, but it will be necessary to divide it into several drainage areas, the sewage from each of which would be treated separately. They make no special recommendation as to methods of treatment, but suggest sedimentation, screening, filtration and disinfection, to be used in combinations of two or more, as local conditions demand. Their immediate recommendation is that either an interstate or, at least, a New York Metropolitan Sewerage Commission be installed to formulate a general plan or policy by which the sanitary condition of the harbor can be permanently protected and improved; and that this plan be formulated and adopted at the earliest possible date in order that it may forestall present propositions which they consider objectionable, rather than, by delay, make necessary a reconstruction of works already completed.

As to the desirability of the serious and expert consideration of the matter by a commission there can be little question; we are not ready, however, to admit that general treatment of all the sewage will be necessary, at least such complete treatment as is suggested in their report. Some of the acknowledged experts of the country believe that the possibilities of disposing of sewage by dilution in the harbor has by no means reached its limit nor is likely to do so for many years to come.

Rules for Refuse Collection

THE Common Council of the city of Port Jervis, N. Y., has arranged for separate collection of garbage and ashes, the cost of which is estimated to be 32 cts. on each $1,000 assessed valuation. This would mean, for a dwelling assessed at $5,000, a cost of $1.60 per year, or about 3 cts. a week.

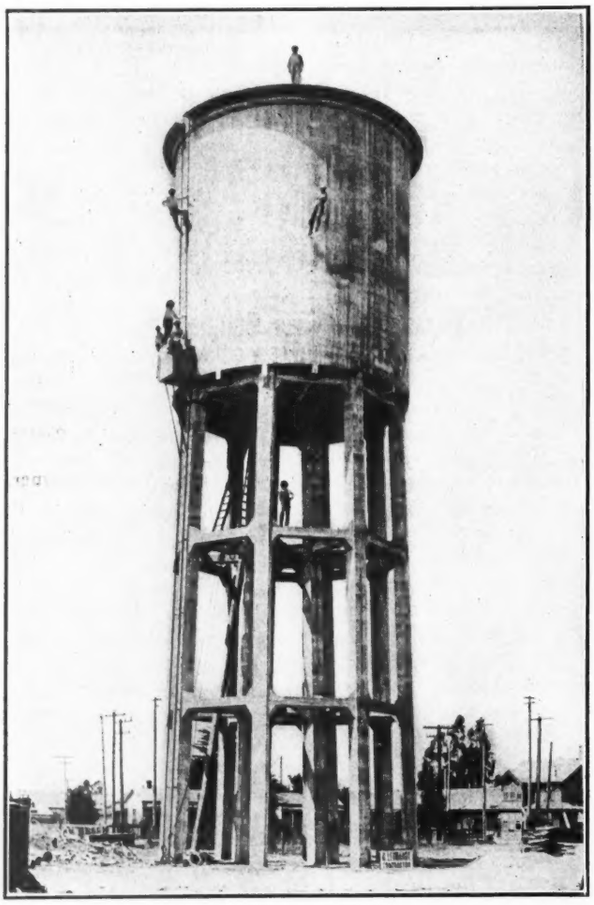
An ordinance has been adopted which requires every owner, tenant, lessee, and occupant of every building in the city to provide receptacles for holding refuse having a capacity for one week's accumulation. Two receptacles are to be provided, one for ashes and rubbish, the other for garbage and liquid substances. They must be provided with handles and metal covers and must not be filled to within nearer than 4 inches of the top. The two classes of rubbish must be kept strictly separated and must be deposited on private property, but conveniently accessible to the collector; the garbage being kept where it will not freeze in winter nor become a nuisance in summer. These materials will be removed by the city collectors from dwellings, but not from manufacturing establishments nor from school buildings. No refuse of any kind is to be accumulated for more than one week and nothing which attracts flies, or would be a breeding place for mosquitoes or in any way create a nuisance, should be placed anywhere around the property except in receptacles provided. Violation of the ordinance is punishable by a fine not exceeding $100, by imprisonment not exceeding two months, or by both. Citizens are requested to burn as much rubbish, papers, sweepings, etc., as possible. Not only rubbish, but also garbage, is to be collected but once a week. General experience has been that for garbage this is not sufficiently frequent in the summer to prevent the creation of a nuisance.

CONCRETE WATER TANK

Resting Upon Concrete Columns 112 Feet High — All Reinforced — Conical Concrete Roof — Capacity of Tank, 200,000 Gallons

By EDWARD P. BAILEY

MANY of the good qualities of reinforced concrete make it especially valuable material for the construction of large and small storage tanks, both rectangular and circular. Tanks and reservoirs may be buried under the ground, placed directly upon the ground, or supported at any desired elevation upon towers of steel, masonry or reinforced concrete. The position of the tank modifies to some extent the structural details adopted, as does the shape, whether rectangular or circular. The general system of reinforcement consists, however, of a network of rods, the size and spacing of the rods varying with the loads to be carried. When rectangular tanks are constructed, the sides consist of reinforced slabs, sometimes strengthened with ribs or beams. The horizontal rods of circular tanks and reservoirs are spliced by lapping or welded into hoops. The tank bottoms may or may not be reinforced, depending upon the nature of the subsoil. When they rest upon the ground they are usually approximately flat, only having enough slope to drain them properly. When tanks are elevated the bottoms are either of spherical or conical shape, usually with the convex surface upward, although it is sometimes placed downward.



GENERAL VIEW OF CONCRETE WATER TOWER

The horizontal rings or hoops forming the reinforcement for circular tanks are placed close together and the spacing gradually increased toward the top, while the vertical rods are spaced uniformly around the tank, the two sets being wired together at intersections. In rectangular tanks also horizontal and vertical rods are used and spaced similarly to those of circular tanks. At the corners formed by adjacent sides the horizontal rods are

FORMS AND REINFORCEMENT FOR BOTTOM OF TANK

usually bent around to make the reinforcement continuous, thereby making the tank as strong at this point as at any point in the side wall. The vertical rods and bottom rods may be bent in the same manner to form a solid junction between the side walls and tank bottom.

Roofs for tanks may be either flat or ribbed slabs, spherical or parabolic arches, spherical arches being preferred when any great load is to be carried on the cover. For flat or ribbed slabs or parabolic arches the usual types of reinforcement are used, while for spherical arches concentric rings, with radial rods wired together, give a satisfactory means of reinforcement.

The latest addition to water tank construction in reinforced concrete in Southern California is an elevated tank at Anaheim, Cal., built by C. Leonardt, of Los Angeles. This tank is one of the first ever constructed in this manner and was built for the Anaheim Water Company. It is 32 feet in diameter and 38 feet high, supported on concrete columns 70 feet high above the ground. It has a capacity of 200,000 gallons and is built entirely of reinforced concrete, reinforced with square twisted steel. The walls of the tank are plain work, 5 inches thick at the bottom and tapering to 3 inches at the top. The floor of the tank is reinforced with ⅞-inch square twisted bars and supported by concrete beams radiating from the center.

The twelve concrete columns, each 16 inches square, are stiffened at two points by two lines of horizontal struts spaced at equal intervals between the ground and the tank. The foundation of the tank consists of a heavy concrete slab 2 feet thick and reinforced with ⅞-inch twisted steel. The tank has a conical-shaped roof of concrete 2 inches thick, with a cornice projecting over the edge, which is slightly raised to give ventilation for the water inside. From the lowest point of foundation to the top of the column measures 112 feet.

When tested the tank was found to be perfectly water tight, without any cracks or leakage of any amount. It is gracefully designed and gives a pleasing appearance of massiveness and solidity. It contains 26 tons of reinforcements and 900 barrels of cement.

The plans were designed by Mr. Schanck, mechanical engineer, and the detail drawings and the strain sheets were made by H. Eckardt, engineer for C. Leonardt. The cost of the tower was $11,400, or 25 per cent lower than the lowest figure on a steel tower of equal dimensions.

CITY MAPS AND RECORDS

THE city of Moline, Ill., seems to have an unusually complete system of maps and records of streets and underground structures. City Engineer Clark G. Anderson reports that maps are kept up to date showing lots, official street and house numbers, water mains, hydrants, valves and taps; the location and size of public sewers and location of T and Y branches. Each service shut-off valve has a number, these running from No. 1 to No. 3196. Each valve in public and private mains has its individual number, as have those on the service pipes to city buildings. This complete mapping and numbering of public service appurtenances is certainly to be commended and should be more common than it is.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Police and Fire Items—Government and Finance

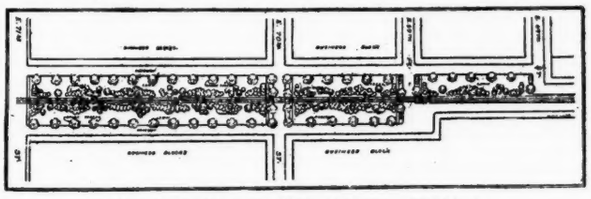
ROADS AND PAVEMENTS

Paving Company Settles With City

Akron, O.—All litigation between the city and the Barber Asphalt Company has been brought to an end. City Solicitor Greenberger reported to Council that a jury in the last trial had given the city a verdict of $7,999.45, and recommended that the city should accept the last verdict, which Council agreed to do. The company has notified Mr. Greenberger that it is ready at any time to turn over the cash.

Plan for Parked Street With Railway

Chicago, Ill.—The illustration shows the proposed plan for improving Stony Island avenue. The street railway in the center will be partly hidden from view by rows of



PLAN OF STONY ISLAND AVENUE, CHICAGO

shrubs. Trees will be planted along the curb of the parkway and a road will be built on both sides.

Over $20,000,000 for Asphalt Paving Alone

Guthrie, Okla.—According to figures prepared by commercial clubs of the state, Oklahoma cities and towns have spent within the last three years over $20,000,000 for asphalt paving alone and a large amount in addition for brick paving. Guthrie alone has let $2,000,000 worth of paving contracts in the last year and a half. Nearly every city in the state of four thousand population or over has done some paving within that period, while paving contractors are continually busy in most of the larger cities of the state.

Snow Melts First on Paved Streets

Harrisburg, Pa.—The coating of asphaltum placed on Upland avenue from Kerlin street to Sixth street is proving a very superior material for highways this winter, and all concerned in the laying of it are well pleased with the manner in which it has withstood the assaults of the most severe weather conditions. The street where it has been paved is clear of snow and ice while the same thoroughfare between Kerlin street and Summit street is coated with ice. Within fifty feet of the end of the paving the pavement is covered with six inches of ice while other streets are also well coated with ice.

Practical Demonstration of Traffic Regulation

Rochester, N. Y.—Carrying out the suggestion of the Public Service Commission for the relief of the congestion at St. Paul and Main streets during the evening rush hours, Traction Expert Charles R. Barnes recently took charge of affairs there for a week and demonstrated that conditions can be greatly improved without changing any cars from Main street to other thoroughfares. From 5 to 6.30 p. m. the first evening there were 139 cars sent through Main street between the Four Corners and St. Paul, there being 20 cars from 6.10 to 6.20 p. m., the highest average. The co-operation of the railroad and city officials assisted materially in improving conditions and motormen, drivers and pedestrians were all compelled to "step lively."

Traffic Regulation

El Paso, Tex.—An ordinance regulating traffic has been adopted, which provides that private as well as public vehicles must carry lights on dashboards at night.

South Bend, Ind.—An ordinance imposing a tax on vehicles, fathered by Councilman R. Fink, has been adopted. The funds will be used in improving and maintaining streets and alleys.

Texas Cities Laying Sidewalks

Commerce, Tex.—The City Council has passed an ordinance requiring that all sidewalks shall be built of concrete or hard stone. The Street Committee was authorized to require owners of property to build walks on any street.

Ladonia, Tex.—Among the recent improvements in the town are cement walks ten feet wide in front of business houses and three streets have built them on one side to the city limits. Other streets have walks in part, with prospect for more soon.

Palestine, Tex.—The work of laying concrete sidewalks in Palestine progresses in a most satisfactory manner, with the South Side in the lead. Within the past year Palestine has witnessed much sidewalk building, and has the distinction of being the only town in this section of the State with the entire business section paved.

Taylor, Tex.—Work has just begun on a half mile or more of cement sidewalks to take the place of flagstones on West Sixth street, leading westward from Main street, a distance of nine blocks.

Citizens May Not Have to Work on Streets

Mishawaka, Ind.—Councilman Richard Roggeman introduced at the session of Council presided over by Mayor John Herzog last week an ordinance repealing the ordinance entitled "Who Is Required to work on streets" in all its sections from 151 to 157 inclusive, which will do away with the road tax. Section 151 says that "all able-bodied male inhabitants of said city over 21 and under 50 years of age shall be required to work two days on the streets and alleys of said city, etc. This ordinance does not apply to active members of the fire department nor to soldiers or sailors of the civil or Spanish-American war. This ordinance gives the city two days' work or in lieu of the work $2 is paid to the street commissioner. Section 152 gives the months of such labor. Section 154 the number of hours and section 155 the penalty. It was referred to the Committee on Ordinance.

Huge Cave Under City Streets

Spokane, Wash.—Nelson J. Tubbs, Supervisor of the City Engineering Department, discovered a cave in a solid rock formation while blasting an excavation for a sewer at Fifteenth avenue and Perry street. The entrance to the underground chamber, revealed by two blasts, is 50 feet in length, while the main cavern is 30 feet in length, from 10 to 20 feet in width and three feet high, with a vaulted ceiling and level floor. The entrance is six feet high and eight feet in width. The formations found in the cave include colored stalactites and other rock of no special value. Local geologists say that the chamber, which is 20 feet below the street surface, probably was caused by an earthquake centuries ago, when what is now the Spokane country was the basin of the Columbia river. The elevation over sea level in that part of the city where the cave was found is nearly 2000 feet. Caves have been found in various places along the Spokane river, but this is the first encountered on the bluffs in the southern part of town.

Railroads Assist in Street Improvement

Taylor, Tex.—Last summer, when traffic was dull with the railroads, the officials of the Missouri, Kansas & Texas Railroad, at the request of the Taylor Good Roads Association, contributed about 100 carloads, or 2,000 cubic yards, of gravel for the improvement of the streets of Taylor. This gravel was delivered here by the company from its gravel pits free of charge and at the option of the Good Roads Association, and was used in constructing a macadam roadway from Main street, in the heart of the business district, to the Katy station, in East Taylor, six or seven blocks. Now the International & Great Northern contributes 125 carloads, or 2,500 cubic yards, of gravel to the city, and it will be used in the improvement of Taylor's business thoroughfares.

SEWERAGE AND SANITATION

Plan to Keep Track of Infected Areas

Chattanooga, Tenn.—The City Health Office has inaugurated arrangements by which to keep track of diseases, which consists of a map of the city, which will be kept on the walls or on file in the office. Every time a case of any contagious disease appears in the city its presence will be indicated on the map at the exact place where it is located. By this means the board officials and the visitor can tell at a glance exactly where infected areas are in the city.

Typhoid Investigation Forbidden by Law

Council Bluffs, Ia.—Dr. R. B. Tubbs, the City Physician, and Dr. C. H. Bower, the City Health Officer, hold diametrically opposite views as to the cause of the prevalence of typhoid in Council Bluffs. Dr. Bower declared positively that the city water was the cause, while Dr. Tubbs was just as positive that the city water was not to be blamed. Dr. Tubbs said that investigations made by him showed that in a majority of the cases the persons attacked with the disease did not use the city water, but secured their drinking water from wells or cisterns. Dr. Bower admitted he had made no particular investigation into the matter, for the reason that the State Legislature at its last session had taken the control of typhoid, whooping cough and tuberculosis away from local boards of health as not being contagious diseases. "The Board of Health would have no more right to enter a man's house to investigate a case of typhoid or fumigate the house than it would to enter the house and steal the man's pocketbook," declared Dr. Bower.

Tunnel Troubles Solved by City Engineers

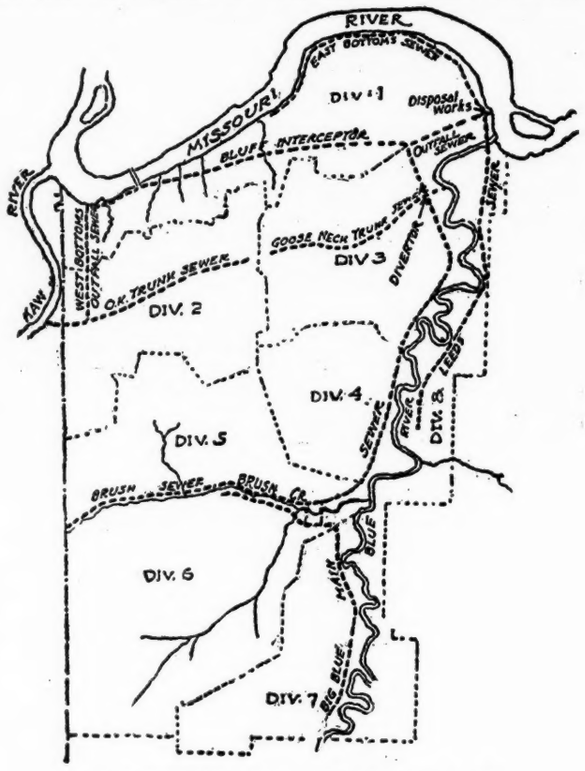
Trenton, N. J.—All the trouble about the presence of the city's sewer beneath the Cadwalader Park tunnel that has been agitating the contracting engineers and seriously delaying the project, has been satisfactorily overcome. The sewer will not be removed and City Engineer Abram Swan is being congratulated for having solved the problem. Fear that the peculiar course of the drain, and its objectionable proximity to the intended abutments, might seriously weaken the concrete arch, caused everybody concerned to reach the conclusion that its removal was absolutely necessary. But Mr. Swan, after several inspections of the work, concluded that hanging iron bars imbedded in the cement and extending from the center to the outer edges, where the top of the sewer is touched, would offer a solution of the difficulty. These bars, having caps at both ends, would so hold the concrete as to make it impossible for the edge or corner nearest the sewer to crumble or otherwise give way, unless the entire structure, from the center to one side should weaken which is scarcely within the range of possibilities. There was an immediate acceptance of the suggestion on the part of the contractors' engineer, the engineer of the Pennsylvania Railroad and County Engineer Eppele. The result is that the city is saved considerable expense that the moving of the drain would entail, at least a week's time is saved to both the contractors and the railroad company and the latter has agreed to bear the trifling additional cost involved.

Waste From Printing Bureau Clogs Sewers

Washington, D. C.—Asa Phillips, Superintendent of Sewers, has suggested to the Commissioners, through Capt. William Kelly, Assistant to the Engineer Commissioner, that the Treasury Department be notified again of the conditions affecting the drainage of the Bureau of Engraving and Printing, and that a system of settling tanks be installed by the Bureau in order to avoid serious obstruction of the District's sewerage system. A vast amount of metallic sediment from the ink and chemicals used in the bureau settles in the pipes of the District's system and endangers the free passage of drainage. The sewer department's employees dug out 7,488 cubic feet of this sediment in 1909, at a cost of nearly $450. Mr. Phillips said that the sediment is of such a nature that it builds up gradually a hard cement-like substance, which in time would stop up the entire system in the neighborhood of the bureau.

New System of Sewers for Kansas City

Kansas City, Mo.—A map of the new sewerage system has been prepared under the direction of City Engineer James L. Darnell. All the sewers in the 60 miles of area in the city limits will connect with this system and the streams will be freed from sanitary drainage. All sewage will be conveyed to a point at the confluence of the Blue River with the Missouri, where later on a disposal plant may be built. The divisions designated in the map embrace water sheds that will be taxed according to the benefits from the drainage of those districts. The O.K. Creek



MAP OF PROPOSED SEWERS FOR KANSAS CITY, MO.

sewer will be the first built. Plans for the Brush Creek sewer, which will extend from the State line to Jackson avenue, a distance of about six miles, have also been approved by the Board of Public Works. It will cost about $100,000, and will be 2½ feet in diameter at the western end and 7 feet at the eastern.

Council Condemns Ice Cut at Sewer's Mouth

Des Moines, Ia.—The City Council last week condemned 30,000 pounds of ice harvested from the river this year on grounds that it was cut below a sewer. A shortage is predicted for summer with consequent increase in price.

El Paso May Now Build Disposal Plant

El Paso, Tex.—Judge A. M. Walthall of the 41st District Court has refused to grant to George Paul the injunction he sought against the city, restraining it from holding possession of a site acquired for the garbage and sewage disposal plant. Paul's contention involved disputed titles in connection with El Chamizal, the plaintiff setting out that the land acquired by the city was held by him under prior right. Paul gave notice of appeal, this appeal to be perfected in 15 days. His bond was fixed at $500. The city will now proceed to let contracts for its garbage and sewage disposal plants for which Dr. Rudolph Hering of New York City is Consulting Engineer.

Cleanliness to Abate Sickness

Lima, O.—The Board of Health will order all streets, alleys and vacant lots cleaned of rubbish and garbage as soon as the weather permits, and Mayor Dyer will enforce the law against corporations or individuals to compel cleanliness and to keep conditions sanitary. An outbreak of chicken-pox, scarlet fever, measles, etc., causing the awakening.

WATER SUPPLY

150-Foot Gusher in Altoona's Center

Altoona, Pa.—Thomas G. Magee, of this city, last week "brought in" one of the finest artesian wells in this section. Barrels of water gushed 150 feet into the air. Well-driller John Witmer says he never saw anything like it. The well is located directly back of City Hall.

Sewage in Water Supply

Akron, O.—The crumbling of a costly trunk sewer laid in quick sand and collapsing of its own weight, has flooded Summit Lake with sewage. Summit Lake is the source of Akron's water supply, and a warning has been issued by the health officer for the people to cease the use of the water.

Filtered Water Exterminates Typhoid

Pittsburgh, Pa.—A census is being taken of water in wells and springs in several sections of the city, and it is probable an order will be issued in the near future prohibiting its use for drinking purposes. It is the belief of health officers that the water supplied by the city from the filtration plant is superior to well or spring water and an analysis is being made to determine the condition of water obtained from different sources. Dr. J. F. Edwards, in charge of the Bureau of Infectious Diseases, stated that typhoid fever has been greatly reduced since filtered water had been turned into the mains, and he believes that it can be almost exterminated.

Typhoid in Mount Vernon Blamed on Water Supply

Mount Vernon, N. Y.—Mount Vernon's water supply is so polluted that it is believed to have caused the typhoid fever now prevalent in this city. The State Board of Health has analyzed a sample of the water and has found in it colon bacilli. The local Board of Health has advised that all water be boiled before being used. Dr. Hughes, the local Health Officer, says that the water is in frightful condition, and the State Board of Health has notified the water company to clean up its watershed. The city gets its water supply from the Mamaroneck River, which runs through the outskirts of White Plains, and it is believed that it is there that the water is contaminated by sewage and drainage.

Johnson City Will Buy Water Works

Johnson City, Tenn.—The City Council has voted to purchase the Watauga and Johnson City Water Company's franchises and contracts. The sum agreed upon by the Council and the Citizens' Commission was $140,000. The city takes charge June 1, 1910. This ends the bitter fight which has been going on for a number of years between the water company and the people. A provision of the contract is that the pipes are to sustain 130 pounds pressure for five days, a bond of $20,000 being executed to save the city by the water company. The city will advertise for bids to construct its new water plant at once, and in the early spring work will commence. The water supply for the new plant will be obtained in Unicoi county, eleven miles south of the city. The springs which the city has purchased have a daily outflow of 8,000,000 gallons, and were pronounced by Walter G. Kirkpatrick, an expert water works builder, to be the finest in the South.

Water Company Cannot Lay Mains

Somerville, N. J.—The Somerville Water Company has failed in its move in the Court of Chancery at Trenton for an injunction to restrain the Mayor and Borough Council from interfering with its work of laying additional water mains in the streets without the consent of the governing body, Vice-Chancellor Walker refusing to grant the injunction. The water company has laid no additional mains for more than twenty-five years and recently attempted to put down some new mains, claiming the right to do so under the original consent of the borough, given in 1876. The borough authorities sought to stop the work through a suit for an injunction, upon the ground that in August, 1909, an ordinance was passed prohibiting the use of the streets for any purpose without the consent of the municipal authorities.

Park Pumping Plant Accepted

Oakland, Cal.—Before an assemblage consisting of Mayor Mott, members of the Park Commission, city officials, and the general public, the pumping plant installed by the Krogh Manufacturing Company in Lakeside Park was tested to the utmost satisfaction of everyone concerned. The plant, which was installed at a cost of over $3,000, has been accepted by the Park Commission, which consists of W. G. Manuel, J. P. Edoff, and W. S. Gould. The water is

ARTESIAN WELL IN LAKESIDE PARK, OAKLAND, CAL.

pumped from two bored wells, 175 and 150 feet deep, into the 250,000-gallon reservoir just completed at a cost of $3,000. From the reservoir the water is taken by two centrifugal pumps through the system of service pipes and hose with which the park is to be irrigated. The capacity of the two pumps, one at each well, is reported as 600 gallons a minute, and during the test on Saturday the centrifugal pumps, forcing the water through several hundred feet of 5-inch pipe, raised a stream three feet high. The capacity of the entire pumping plant proved in excess of the specifications. W. F. Brown and C. F. Alfard of the city engineer's office; M. Lamond, superintendent of parks, and Henry F. Vogt, assistant secretary of the park commission, also witnessed the exhibition.

Test at New Pumping Station

Augusta, Ga.—The new pumping station has been given a test by Commissioner of Public Works Nisbet Wingfield, and it was perfectly satisfactory. The new station is equipped with a 6,000,000 gallon capacity vertical steam pump, furnished by the Wilson-Snider people, and a twin boiler furnished by the Lombard Iron Works of Augusta. The pump was placed several months ago, but the hundreds of pipes connecting the machinery were only recently completed. The auxiliary pumping station will not be used except when the water power pump is out of order, or when the water is out of the canal. In case of an accident to the water power pump, the steam pump can take water direct from the river, and keep the reservoir well filled.

Stops Water Through Private Fire Service

Providence, R. I.—An effort to reduce the consumption of water per capita, and to prevent waste through leakage, is being made by the Department of Public Works by the introduction of fire service meters, which measure the amount of water supplied to a mill or business block through the private fire system of the building. Up to the time of the introduction of the new meter a few weeks ago there was no way of measuring this amount of water save by calculation and approximation, neither was there any way of ascertaining whether the water from the fire service was being used for other purposes without payment being made to the city for such use. According to Commissioner of Public Works Walter F. Slade, the leakage from the fire service reached such an amount a few weeks ago that it was found necessary to take prompt measures to shut off all such waste in order to prevent the city's high-pressure system from being crippled and hence insufficient in case of a big fire. The introduction of a Hersey detector-meter was decided upon and several have been installed throughout the city and are now working to the effect, according to the Commissioner, that the daily consumption of water by the city has already been reduced about half a million gallons.

STREET LIGHTING AND POWER

Lighting and Fire Alarm Matters

Atlantic City, N. J.—City Electrician Al Farrand in his annual report recommended that Council take steps to get the Legislature to pass a bill similar to that in New York requiring all corporations to put their wires underground; that signs be placed on corners where there are no fire alarm boxes indicating the nearest box; that an ordinance be passed fixing a fine of $50 for turning in false fire alarms, and that the Boardwalk illumination scheme be made permanent at a cost of $15,000.

Natural Gas for Baltimore

Baltimore, Md.—Nearly all the right of way for the proposed natural gas pipe line from the fields around Weston, W. Va., to Baltimore has been secured by the Standard Oil Company. The line passes across mountains and streams, through several counties in West Virginia, into Virginia, then into Frederick county, Maryland, south of the main line of the Baltimore & Ohio Railroad. It crosses the Patapsco river about Ilchester, comes into

PIPE LINE FOR NATURAL GAS TO BALTIMORE
Dotted line shows probable route to Philadelphia.

Howard county and reaches the city through Baltimore county in the vicinity of Westport. This places the line in a district where the Consolidated Gas Company already has a large plant. As some of the land nearby may be available it is thought that a site for storage purposes may be secured. The route as shown on the map is not completely accurate in detail, being based upon information believed to be approximately correct, but not reproduced from drawings. The heavy dotted line shows the possible route to Philadelphia along the lines of the Philadelphia, Baltimore & Washington and Baltimore & Ohio Railroads. Standard Oil interests have asserted that if Baltimore is not to be the distributing point for gas it is more likely to go West than to come East.

Clay Center Light Plant Won

Clay Center, Kan.—The State Supreme Court and the United States Supreme Court have decided that Clay Center is free from the old electric light company. A year ago the company attempted to inject a Federal question into the matter and obtained a hearing before Federal Judge Pollock through a restraining order preventing the city from interfering with the old company's poles or wires, and Judge Pollock has just decided that the Federal Courts have no jurisdiction. Clay Center has built a city electric light and power plant and the business of the town is divided between the municipal and private plants. The matter has been in litigation in various courts about four years.

Underground Wires in Fire Limits; Pole Tax Outside

Decatur, Ill.—The special committee appointed by the City Council several weeks ago to consider the suggestion that all wires carrying electric currents be placed in the ground has recommended that there be drawn an ordinance requiring all utility companies owning poles for carrying wires to pay a tax per pole outside the fire limits. The committee also recommended that within the fire limits all wires of utility companies be placed in conduits, the limit of time for completing that work being three years; that each company be required to furnish the city with a map showing the routes of the conduits; and that the city be permitted to place municipal wires in these conduits without charge. The same committee presented an ordinance providing that hereafter, within the fire limits, in new construction, all electric wires should be placed in metal conduits, and that metal conduits should be provided for all wires in public buildings.

Why Electric Company Has Violated Franchise

Lansing, Mich.—The Michigan Power Company has presented to Council its defence for violating the terms of its franchise by furnishing electricity for lighting purposes. In a communication Manager Low admitted that when the franchise was granted the Aldermen and the franchise holders intended that the power company and the municipal plant should not encroach one upon the other's territory, but, it is claimed, conditions have since changed which make it advisable for factories to purchase their electricity for power and for lighting from the same source, and the manufacturing institutions cannot be served by the municipal plant or the power company without violating the letter of the agreement. In fact, it is claimed by the Michigan Power Company that to prevent users from purchasing current from the same source for power and lighting purposes will work a hardship upon factory owners in this city. The company claims that its contracts with industrial institutions are to furnish electricity for power purposes, but since entering into these contracts it has learned that in several instances the users are utilizing the current for lighting purposes.

Gas Compromise at Minneapolis

Minneapolis, Minn.—A twenty-year contract ordinance, without a purchase clause, was finally passed by Council last week after a fight lasting many months. It provides 85-cent gas to private consumers, 65 cents to the city, the city is given right to readjust gas price in three years, and every five years thereafter; publicity of the company accounts is provided for; Council is tacitly pledged to stand for 600 B. T. U. gas instead of 635 originally planned, and that the cost of the plant instead of its value shall be considered should the city decide to buy in 1930. On February 1, when the first ordinance was passed, 26 Aldermen voted for a five-year purchase clause; February 18, on the passage of the second ordinance, 25 voted for a ten-year clause, and on the final passage 19 voted against any purchase clause whatever.

Enameled Arc Lamps Aid City Beauty

Montgomery, Ala.—Showing his appreciation of a city beautiful and going Mayor Gaston Gunter one better in his clean-up program, Robert J. Chambers, Vice-President and General Manager of the Montgomery Light and Water Power Company, has sent out a wagon crew of three men to paint every arc lamp in the city, enamel the reflectors and line them up so that each will be as far from the curb as the other. In this way the lamps will hang evenly in the center of the streets and give a neat and attractive appearance. Mr. Chambers also is having wires taken from trees and poles and replaced where needed, as well as giving the whole of the transmission organization a boost to help along the city beautiful ideas. All cross arms are to be inspected and nothing left alone that will add to the good looks of the property the company has in use for the city and the people.

Electric Light Company Sues

Jackson, Miss.—Messrs. Carnes & Jones, owners of the Electric Street Railway and the Lighting Plants in Jackson, have filed suit in the Chancery Court here against the city for the difference between what the city is paying for lights and what the light company thinks should be paid. Prior to last year Jackson was paying $114 per lamp for her lights. That old contract expired and a new one was entered upon, based on what the five cities nearest Jackson are paying. The city figured out that she should under this agreement pay $87.60 per year, and the company made it out $95, basing their claim on different cities from those the city based her price on. The company wants the difference and asks for an accounting by the court. In the meantime the two electric light companies of the city have recently combined and there is more kicking about the price of lights being increased than was ever heard here before. There is also talk of organizing an independent, mutual company, and still other talk of securing the passage of a law by the Legislature to provide for testing the candlepower of lights used by municipalities. The contract here is for 2000 candlepower, and it is claimed and charged that the city is getting nothing like it.

FIRE AND POLICE

Needs of Baltimore Fire Department

Baltimore, Md.—The National Board of Fire Underwriters, after an exhaustive examination of the Fire Department by its experts, criticizes the structural character of buildings in the congested portion of the city, urges the early completion of the fire-pipe line and the establishment of fifteen more fire-fighting companies. Other important recommendations follow:

That all aerial ladder trucks carry 50-foot extension ladders for use in alleys and where aerials cannot be operated.

That ladder trucks responding to alarms in parts of the city unprotected by the fire patrol carry salvage appliances, including six waterproof covers.

That the type of discharge gates on engines be changed to one more easily operated under pressure.

That officers of companies answering in the second or subsequent alarms be required to report to the officer in command, who shall direct what hydrant shall be used by each company.

That commanding officers at fires be required to send under their distinctive signals all alarms after the first and that such alarms shall always be sent from the original alarm box. This arrangement may necessitate cards made up for fourth and fifth alarms.

That there shall be regular drills in ladder and hose work, especially for new men.

That company officers shall make regular quarterly inspections of all buildings, except dwellings, and report on hazardous risks.

That engines be tested yearly.

That additional hydrants be installed outside the fire pipe line district.

That each fire station shall be furnished with a map of the water distribution system.

That the use of fire hydrants be confined to the Fire Department, and the Street Cleaning Department be required to use special hydrants and standpipes.

Test of Fire-Fighting Capacity of Water Works

Meridian, Miss.—A test of the water works fire-fighting capacity was made recently by Inspector S. F. Lawton, of the Louisiana Fire Prevention Bureau. Nineteen standard fire streams were easily maintained. Inspector Lawton states the efficiency of the water works to be in excess of insurance requirements. Manager W. F. Wilcox of the water works system has direct charge.

Volunteer Fire Companies in Race

Gainesville, Tex.—The Volunteer Fire Companies recently competed in a half-mile run for a purse. Hose Company No. 2's record was 2:13, running half a mile, laying out 350 feet of hose and forcing water on a building. Chemical Engine Company No. 1, in 3:01. The Hook and Ladder Company, in turning a corner, came in contact with a telegraph pole, throwing the two horses to the ground and breaking the pole in the apparatus. No one was injured.

Fire Department Shows Its Value

Hazleton, Ind.—Hazleton's Fire Department, which costs the town $600 a year, paid for itself three times at its first fire recently, by saving $1,800 worth of property. Fire broke out in the plant of the White River News, when the flame-checking apparatus worked effectively and kept the loss within $400.

Costs City $420 More for Fire Truck Fight

Orange, N. J.—An echo of the prolonged controversy and litigation arising over the purchase of a new truck for the Orange Fire Department was heard at a recent meeting of the Common Council. This was a bill of the American La France Fire Engine Company for $420 for interest charged on the bill for the truck which was held up until the matter had been settled by the courts. Surrogate Isaac Shoenthal, who was Mayor of Orange at the time the truck was purchased, refused to sign the warrant for $4,000 for the truck on the ground that the apparatus was not up to the specifications. The courts overruled him, but the bill was laid over until after his term expired. Mayor Arthur B. Seymour finally approved it, in accordance with the court's decision. The bill for the interest was ordered paid.

Cooperative Fire Protection Between Big Cities

Oakland, Cal.—Arrangements have been completed with the officials of the San Francisco Fire Department whereby the fire fighters of that city will aid Oakland in case of urgent need. The agreement is one of reciprocity and in the event that San Francisco should at any time need the services of the Oakland fire fighters, engines, wagons and men will be transported across the bay. A campaign has been started against the Fire Underwriters in an attempt to secure a reduction of the rates, which was promised the merchants on the completion of the salt water pumping plant.

South Jersey Towns to Aid Each Other

Woodbury, N. J.—When the new fire company at Barnesboro gets its equipment of hose, and the proposed changes of the fire hydrants owned by a private company in Mantua are made to the regulation size the companies in this city, with the help of companies to Clayton, would be able to run a line of hose as far as Franklinville, 16 miles away. An extension would also be possible as far as Gloucester, with the assistance of the Westville Company. Another line could be run from Woodbury to Paulsboro, with a slight increase in the hose supply. Glassboro and Pitman companies have hose enough to reach from those places to Barnesboro, and the new companies from Barnesboro and Mantua could easily run to this city. When its new firehouse is completed Clayton will purchase additional hose, and the three towns of Clayton, Glassboro and Pitman, with their excellent water pressure, can cope with almost any size conflagration, while Woodbury could assist Mantua and Barnesboro, also Wenonah, when necessary. Thus while nearly all these towns are well protected in case of fire the insurance rates cause continual protests from property owners.

Locomotive Fights Fire

Hurlock, Md.—A prey jointly to flames and frozen water supply, Hurlock was saved by the arrival of a Seaford & Cambridge Railroad locomotive with a tank filled with water. Then a bucket brigade got busy, and as the flames thawed the standpipe, while nearly destroying it, valiant efforts finally subdued the fire before help could arrive from Federalsburg and Salisbury.

Auto Apparatus and Underground Wires

Providence, R. I.—The Fire Commissioners in their annual report to the Board of Aldermen renew their recommendations for the aerial type of ladder trucks, life-saving devices and drill paraphernalia, the introduction of automatic apparatus as being superior to horses, and the placing of the entire alarm system underground. At present there are in the underground service 84 public and 25 private boxes, and in the aerial service 283 public and 57 private boxes, making a total of 449 in the entire city. Concerning apparatus the report says:

For a long time this department has watched with interest the development of the automobile as far as its adaptability for fire department use is concerned, and we believe that it would be greatly to the advantage of this service if action was taken looking to the introduction of such apparatus. There can be no question regarding the superiority of the motor vehicle over that drawn by horses so far as it relates to the work of the Chief and his assistants or to that of the companies equipped with hose or combination wagons.

The initial cost of the motor vehicle is admittedly greater, but on the other hand the expense of maintenance is much less. No comparison can be made in this respect between the automobile designed for commercial purposes and those used n a service like that of the fire department, inasmuch as with the latter the only expense incurred is during the limited period in which the machine is being operated.

Women Form Fire Company

Allentown, Conn.—The women of the town have organized a fire company and will respond to the call for protection against fire in the village.

Steals Patrol Wagon

Sacramento, Cal.—The most impertinent theft in the annals of the local Police Department occurred when some "joy rider" stole the Protrero Station patrol wagon and horses. They were taken soon after dark and found straying four hours afterward. The police are desirous of providing another ride in the same vehicle for the offender.

Firemen Must Study Building Plans

Fond du Lac, Wis.—Fire Chief Doll is preparing a record of the basement plan and general interior arrangement of every large building in the city. The Chief will have careful measurements taken of interiors and a plan prepared showing the windows, doors, stairways and partitions. Brick partitions will be lined in black and board partitions in red. Brick veneer buildings will be finished with a thin red line about the plan to indicate this form of construction. As soon as the volume is completed, the Chief will turn it over to the members of the department for study. In this way, the firemen become acquainted with the interior arrangement of the buildings, which proves of great value in the event of a fire.

Card Index for Building Records

Rochester, N. Y.—An important improvement in the facilities of the Fire Department is being considered by Commissioner of Public Safety Owen and Fire Marshal Pierce, by which a complete record of every business building would be placed at the disposal of the Fire Chief and the officers of every fire house. The records would be compiled in card index form so that any building used for commercial purposes could be located instantly in the event of a fire. To compile such a system of records would in the first place require a careful inspection of all commercial buildings and the recording of conditions existing within it, the number of floors, character of building and uses, fire plugs, fire escapes, and past record so far as possible. Commissioner Owen and Chief Little examined such a set of card records of commercial buildings now in use by Chief Croker, of the New York Fire Department, when they inspected the firemen's training school there a few days ago. The system has proved of great utility to Chief Croker. Several thousands of cards would have to be used.

Safety Skylight Invented by Fireman

New Orleans, La.—John A. Bergstrom, of Fire Insurance Patrol No. 1, has invented a cover for skylights which is intended to permit the light to enter and at the same time be readily let down when there is a fire in an adjoining building, to prevent its spreading through skylights, as considerable damage is often done to fire getting into adjoining buildings through skylights. He has studied out a device to be made of galvanized iron or other metal that will work on mechanism, so that from the top story of the building the firemen can shut it. Mr. Bergstrom says that the firemen always go into buildings adjoining that in which there is a fire, and the plan will work readily. The mechanism is also burglar proof, and may be fastened at night so as to give protection in that way, but in the daytime it stands up, being held by a curved lever and screw. Mr. Bergstrom has applied for a patent. He has been connected with No. 1 Patrol for twelve years, and has studied the subject of fires closely.

All Picture-Show Houses Must Have Fire Curtains

Indianapolis, Ind.—All moving-picture shows that, in addition to displaying pictures, present vaudeville turns, must be equipped with asbestos curtains and conform to the State laws regulating exits from such buildings, according to William E. Blakely, State Factory Inspector, whose deputies have been reporting that such amusement places out over the State are not complying with the law.

Fire Commissioners to Inspect Theaters

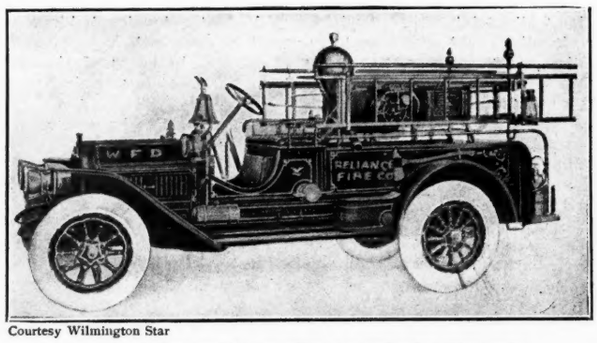
Omaha, Neb.—The Board of Fire and Police Commissioners soon will make an inspection of all Omaha theaters, with a view of keeping fire hose, stairways and fire escapes in good working order. Fire Chief Salter will accompany the commissioners on their tour.

Fire Escapes to Be Inspected

Washington, D. C.—To inspect fire escapes with a view to preventing their crashing to the ground at critical moments will probably be embodied in the instructions which Commissioner Johnston will give to the Fire Marshal. The matter was suggested by Commissioner Judson and was brought to his mind by the accident at the Hotel Harris fire, where the last length of the fire escape refused to let down, and finally broke. One man, who was on the escape at the time, died as a result of the accident.

Automobile Fire Apparatus

Wilmington, Del.—The automobile fire engine recently installed in the quarters of the Reliance Fire Company by the Webb Company, has been given daily tests under direction of D. H. Steers, demonstrator of the builders, who will remain in the city for a month, instructing the members in operating it. Carrying seventeen firemen the 90-horsepower machine scaled the hilliest streets in the town without difficulty, approaching them at a speed of 41 or 50 miles an hour, and it is now known as the "Green Streak."



Courtesy Wilmington Star

AUTO ENGINE BEING TESTED AT WILMINGTON, DEL.

Mayor Spruance and members of Council have enjoyed a trip on the engine and also witnessed the pumping tests which were satisfactory. It has been equipped with a device recently patented by John T. Lally, a member of the Reliance Company, known as a "Self-starter." It will be rigged on the floor of the engine house and at the first tap of an alarm will start the 90-horsepower gasoline engine providing the motive power for the huge apparatus. By this device the engine will be ready to start out of the house by the time the firemen have slid down their poles and grabbed their hats.

Nahant, Mass.—The first auto fire engine in Essex county has been installed at Bass Point, the Knox Automobile Company having furnished the apparatus, equipped with a 40-horsepower engine to the C. M. Perkins Company of Lawrence, where the outfit was assembled. The body of the wagon is 16 feet in length and six feet in width, mounted on a truck chassis, and provided with the large chemical and pony chemical tanks from the old Hose 3 wagon. The hose-carrying capacity is quite extensive, carrying about 800 feet of chemical hose. About 4000 feet of fire hose may also be carried. A four-cylinder, 40-horsepower Knox, air-cooled engine supplies the motive power, which is transmitted by a shaft and sliding gears to a double-chain drive, acting upon the rear wheels. The new truck is provided with a search light, fed from a prest-o-lite tank, bell and horn and appears to be a substantial addition to the fire-fighting force of the town.

Walla Walla, Wash.—Fire Chief William Metz has received the new fire auto and is giving it severe tests on the roughest streets of the city. It is the product of the Seagraves Company, of Columbus, O., and cost the city $4,950. It carries two 24-foot truss ladders, is supplied with a 60-gallon chemical tank, is equipped to carry 2000 feet of standard hose and a quantity of one-inch hose and weighs about four tons. It is propelled by a 40-horsepower gasoline engine, and is guaranteed to maintain an average speed of 30 miles an hour on ordinary grades.

Five Men to Auto Fire Engine

Dallas, Tex.—When the city gets the new automobile fire engine it is expected that for sixty days there will be demonstration work and instruction by the company supplying it. This will be for the purpose of acquainting the Dallas firemen with the management of the machine and of ascertaining some of the adaptabilities of the engine and hose wagon to the streets of Dallas. Besides the engineman, it is expected that there will be two nozzlemen and two hosemen, with varied duties, a force of five men to accompany the machine. These men are to be selected and designated for the work when their proficiency is demonstrated upon the machine. This first of the Dallas automobile fire engines was decided upon the bid of the Webb Motor Fire Apparatus Company and is to cost $8,250.

GOVERNMENT AND FINANCE

Supreme Power of Boston Mayor

Boston, Mass.—The powers of the City Council as a committee on appropriations and the power of the Mayor in drawing up the annual budget are at odds. The difficulty arises over a clause of the new city charter which the Council members think may mean the nullification of their usefulness, and there is talk of the necessity of an appeal to the Supreme Court to straighten out the tangle. Corporation Counsel Babson is quoted by Councilmen as being of the opinion that, should the Council reject or reduce any item of the budget, the Mayor has the power to put it back again.

Illinois May Regulate Public Utilities

Elgin, Ill.—Elgin has started a move, among cities of Illinois, to have a bill passed giving cities and villages the right to regulate the price of public necessities such as gas, electricity and telephone service, by the representation of a resolution before the City Council. The resolution was introduced by Alderman Pegler of the Fourth Ward, and provides that legislators in each district be furnished with copies of the resolution, and that it be sent to all cities in the State, for action.

Commission Government

Emporia, Kan.—Emporia has voted to adopt the commission form of government, the proposition carrying five to one.

Pierre, S. D.—The commission plan of government carried in this city by a majority of 215.

Dell Rapids, S. D.—At a special election Dell Rapids adopted the commission form of city government by an overwhelming majority.

Mitchell, S. D.—The commission form of city government was rejected here by a majority of 336. The liquor interests worked against it.

Kenedy, Tex.—The election held here to decide whether this town would incorporate under the commission form of government resulted in favor of incorporation by a good majority. H. W. Dailey, son of the first merchant and postmaster of Kenedy, was elected Mayor; E. P. Ruhmann and A. F. Kaufmann were elected Commissioners.

Cuero, Okla.—A petition asking the Mayor to order an election for the purpose of determining whether or not Cuero shall adopt a commission form of government is being circulated by the committee recently appointed at a citizens' meeting.

Guthrie, Okla.—Advocates of the commission form of government for Guthrie have begun the circulation of petitions asking for another election to be held April 5. The petitions are being signed rapidly. At the election held recently the proposal was defeated by about two hundred votes.

Charlottesville, Va.—Council, on motion of Mayor John S. Patten, has instructed the City Attorney to draw an amendment to the constitution which will permit the city to adopt the commission form of government next June, when the present Council pledged itself to resign.

Town of 25,000 to Incorporate

Providence, R. I.—A city charter for Warwick, said to be the largest "town" in the United States, will be requested from the General Assembly next year. The incorporation of Warwick as a city would settle the controversy now pending relative to a division of the town, which is composed of several villages. The town's population is more than 25,000.

Dogs Cause Wrangle Between Mayor and Council

Woodbury, N. J.—At a recent meeting Council rapped Mayor Ladd for his alleged failure to enforce the ordinance prohibiting unmuzzled dogs running at large, and the Mayor retaliated by telling the City Fathers that it is through their neglect and not his that the ordinance has not been enforced; he says there is no penalty attached and that the Council has for 11 years steadfastly neglected to appoint a Dog Warden, which is absolutely necessary, or to provide a place in which captured canines may be confined and mercifully put to death.

RAPID TRANSIT

Three-Cent Fares Begin in Cleveland

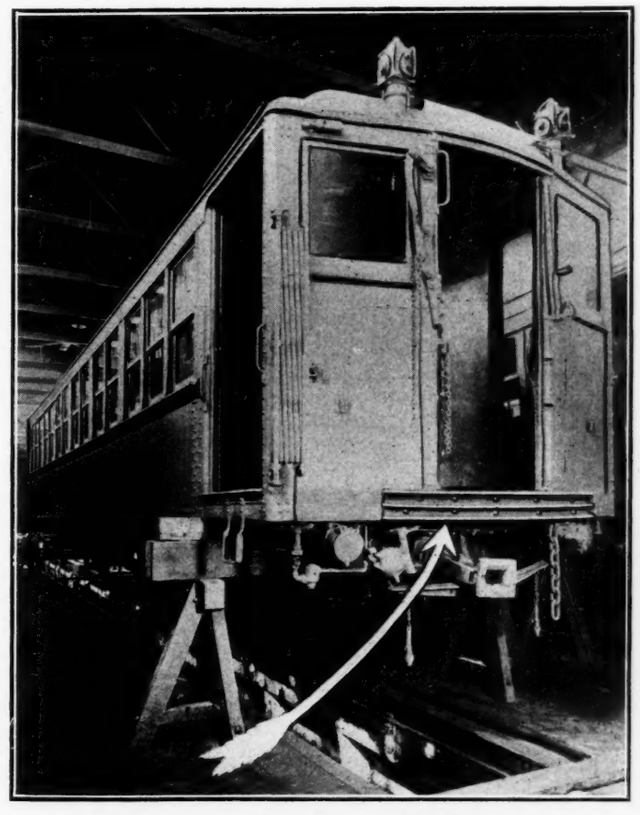
Cleveland, O.—Three-cent street car fares went into effect last week, marking the end of the traction war begun by Tom Johnson in 1901.

Special Election on Street Car Ownership

Des Moines, Ia.—Under the provision of the commission plan of government the Socialists have forced a special election on the question of municipal ownership of street car lines for March 28. They have petitions signed by 10 per cent of the voters.

Safety Appliances Saves Lives in Subway

New York, N. Y.—A collision in the McAdoo tunnel last week, in which there was no fatality, brought forcibly to the attention of city officials and railroad men the great improvement of the steel rapid transit cars over the wooden cars which have been in general use in the past. A contributing cause to the comparative safety of the passengers, also, was the "anti-climber," with which the cars are equipped, which prevented the cars from rising or climbing from the tracks, causing telescoping. The device, which is the invention of Frank Hedley, general manager of the Interborough Railroad of New York City, consists of two series of large teeth or cogs—one on each car—so arranged that when the cars come together the teeth interlock, thus preventing the cars from rising. Upwards of 1,000 cars on the elevated and subway lines are equipped with the device, but this was the first practical demonstration of its efficiency. All New York cars are to be equipped as rapidly as possible by the Whipple Supply Company, 50 Church street, New York City, which has also received orders for a limited number in Philadelphia; also for cars in Chicago and Boston.



CAR EQUIPPED WITH HEDLEY PATENT ANTI-CLIMBER

Undergoing Repairs After Wreck When It was Saved from Demolition by Equipment

Dayton Settles Traction Troubles

Dayton, O.—The final Ohio Electric ordinance has been prepared and turned over to Clerk of Council Wayne G. Lee recently by Solicitor Burnham. The ordinance is now in the form to which President Schoepf of the Ohio Electric agreed at an executive session of Council, and the ordinance is decidedly more advantageous to the city than any of its predecessors, though the old Council was not successful in coming to an agreement with the company, or, rather, in getting the company to agree with it. The amicable relations between the city and the Ohio Electric, after months on months of bitterness and inconvenience to both sides, was undoubtedly the greatest triumph of the new administration. Solicitor Burnham gives it as his opinion that the ordinance will not require the thirty days' advertising, and it will be given three readings and passed on suspension of the rules at once.

Eight-Block Trolley Line in Atlantic City

Atlantic City, N. J.—With railway officials, real estate operators and cheering cottagers for passengers, the Venice Park Traction Company's line, the shortest trolley system in the State, was opened for service. The line runs from a junction with the Shore Fast Line, on Marmora avenue, across the Penrose Canal to Venice Park, a new residential district, a distance of about eight blocks. The rolling stock consists of a single car and a motorman-conductor is the only employee. The car will stop at every house in the park.

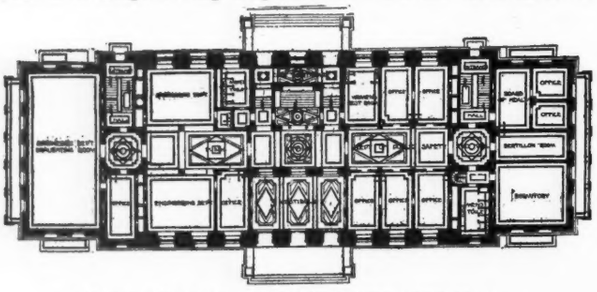
Expert Looks Over City Traction Line

Sioux City, Ia.—F. A. Wilkinson, of New York, an expert of the Westinghouse, Church, Kerr Company, is in the city looking over the property of the Sioux City Service Company. He will make a report on its physical condition to a bond buying house that is considering the purchase of the $2,000,000 issue authorized by the company a year or more ago and which has not been taken up. The Service Company authorized the issue to take care of the floating debt, the improvements now under way in the plant and lines and future improvements, but has been carrying on the work thus far on commercial paper. It has been claimed that the clause in the franchise which gives the city the privilege of purchase is a deterrent to the sale of bonds.

MISCELLANEOUS

Des Moines City Hall

Des Moines, Ia.—The illustration herewith shows the ground floor plan of the new City Hall. It shows the Public Safety and Health Departments, Women's rest room and Engineering Department. On the first floor of



GROUND PLAN OF DES MOINES NEW CITY HALL

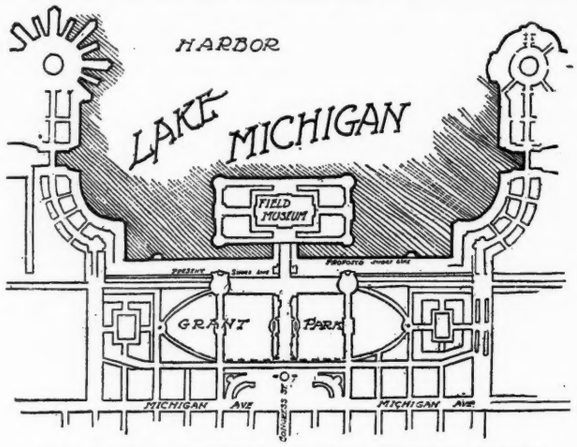
the building are located the Council room, Mayor's office, Civil Service rooms, law library and private offices. The gymnasium is in the basement.

Municipal Theater Enjoined by Competitors

Quinton, Okla.—Guy Curry, a local attorney from Quinton, representing several good citizens, secured a temporary injunction in the Superior Court at McAlester restraining the Mayor and Town Trustees of Quinton from carrying out a contract to repair and rent for a theater a building built for school purposes. The petitioners contend that a town cannot lawfully embark in the show business.

Island Site for Field Museum

Chicago, Ill.—Plans for an island site for the Field Museum in Lake Michigan off Congress street, a bill providing for which project passed the State House of Representatives recently, have been completed. The island home for the museum was proposed as an alternative in case the proposed site in Grant Park could not be secured. The suit



NEW LOCATION SUGGESTED FOR FIELD MUSEUM, CHICAGO

to acquire the rights of objectors to the park site is now pending. "The bill had been previously adopted by the Senate," said Stanley Field, in talking of the situation, "but the house attached an amendment providing that the land shall revert to the State in case it should not be used for the original purpose. If the Senate concurs in the house changes it must be referred to the War Department at Washington, which has control over all matters involving navigable waters."

City Will Make Hats for Women

Milwaukee, Wis.—For $2 a Milwaukee wife can have a hat made. The city will do the job for that price. Millinery is the latest enterprise added to the list of activities of the municipality. It is destined, members of the School Board believe, to be of as great benefit to the public as some of the other municipal enterprises. The milliners alone will have cause for complaint. It is expected that they will rise up in protest and they may be given the assistance of the union. The $2 hat-making will be done by the students at the new Girls' Trade School. Dressmaking also will be done for the populace at the same institution at prices much less than usually charged. The committee has decided upon a sliding scale for making dresses. Whether the price will depend upon the size of the gown or upon the amount of "trimmings and fixings" has not been determined.

St. Louis Billboards Must Go

St. Louis, Mo.—Fifty per cent of the space now occupied by offensive and unsightly billboards in all sections of St. Louis will be cleared by Building Commissioner Smith as the result of a decision handed down in the Supreme Court last week, which upholds the validity of the billboard ordinance of St. Louis. Judge Woodson said not only has St. Louis the right to regulate and control billboards and kindred methods of advertising, but that that may be controlled by legislative enactment. This view is expected to result in the passage of drastic laws of State-wide significance by the next Legislature. The average billboard, Judge Woodson holds, is a constant menace to public safety, health and morals by its pictures, and constitutes a hiding place and retreat for criminals.

Landscape Architect Wanted by St. Joe

St. Joseph, Mo.—With the nucleus of a park and boulevard system already in its care, the St. Joseph Park Board is heartily in favor of the plan to secure the services of a landscape architect, who will take what is here and fashion it into a system which is expected to rival that of any other city in the West. W. D. Webb, Henry Uhlinger and John D. Richardson comprise the board.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Claim Against Water Commissioners

Davidson vs. Village of White Plains.—The Water Commissioners under the charter of White Plains were directed to acquire lands in the name of the city, and all revenues from the supply of water were to be paid to it. The Commissioners were directed to file statements of sums required by them, on receipt of which the trustees of the village were directed to issue bonds and place the proceeds to the credit of the Commissioners, the Village Clerk being required on a requisition from the Commissioners to sign a draft for any amount or bill presented and certified by the President and Secretary of the Commission as audited by it, etc. Held, that the relation of principal and agent existed between the Commissioners and the village, so that, where the Commissioners refused to audit a claim for the price of a pumping engine furnished them by plaintiff, plaintiff's remedy to establish his claim against the village was not by mandamus against the Commissioners, but he was entitled to sue the village. Where a complaint for the price of a pumping engine delivered to the Water Commissioners of a village was not demurred to for failure to allege that the Commissioners unreasonably refused to audit and certify the claim, but defendant waited until trial of the action to raise the question, plaintiff was entitled to rely on the admissions in the answer that the village repudiated all liability to cure the defect.—Court of Appeals of New York, 90 N. E. R., 825.

Definition of Improvement District

Wiese et al. vs. City of South Omaha et al.—It is the duty of a city, when creating an improvement district for a local improvement, to define the limits thereof with sufficient certainty to identify the lots or lands sought to be included therein, and to publish a statement of such limits in the manner and for the time required by statute, prior to the levying of any assessment upon adjacent property to pay for such improvement. And where a special assessment for such improvement is made without a compliance with such jurisdictional requirements, such assessment is void, and may be assailed collaterally.—Supreme Court of Nebraska, 124 N. W. R., 470.

Sidewalk Defects—City's Responsibility

City of St. Paul vs. Hyslop.—A city's duty to keep a street or sidewalk in order includes the duty of reasonable supervision, so that, if the exercise of such supervision would have led to a discovery of the defect by which plaintiff was injured in season to have enabled the city to have repaired it, or to protect the public against it, the city was subjected to the same liability as though it had actual knowledge.—United States Circuit Court of Appeals, 174 F. R., 391.

Assessment—Alleged Irregularities

Collins et al. vs. City of Keokuk et al.—Where a property owner in fact appeared before the City Council and objected to certain irregularities in the proceedings for improvement of an alley and insufficiency of the work as done, and such objections were overruled, he could not thereafter raise them again in a proceeding to enjoin the enforcement of the assessment.—Supreme Court of Iowa, 124 N. W. R., 661.

Implied Contracts—Liability

McCormick vs. City of Niles.—The liability of a municipal corporation to pay for the publication of ordinances, resolutions, and legal notices required by law to be published must rest on express contract, and not upon a mere account for the rendition of such services.—Supreme Court of Ohio, 90 N. E. R., 803.

Taxing Farm Land

Atherton vs. Village of Essex Junction.—Farming land within the limits of an incorporated village can be taxed for general village purposes, though no benefit accrues to the owner.—Supreme Court of Vermont, 74 A. R., 1118.

Gas Franchise—Rights in Streets

City of New York vs. New York Mutual Gaslight Company.—Laws 1866, creating a corporation with a perpetual franchise to manufacture and sell gas in a city, and providing that no street shall be dug into without the permission of the city authorities unless written consent thereto is given by a majority of the owners of the abutting property, and declaring that the corporation shall be subject as far as applicable to Laws 1848, Section 18 of which provides that corporations to supply gas may lay pipes through the streets with the consent of the municipal authorities, etc., repeals section 18; and the franchise given is perpetual and complete and requires no secondary franchise from the city to make it effective, and the provision as to permission to lay pipes in the streets is an administrative consent to a particular place, and a permission given by the city to lay pipes in streets for a specified time is ineffective as a limitation on the power given by the Legislature, and, when the permission has been acted on, there is no right to order a removal of the pipes after the expiration of the specified time.—New York Supreme Court, N. Y. S., 775.

Speed Laws—Automobile

City of Shawnee vs. Landon.—Penal statutes cannot be enlarged by implication or extended by inference. No person can be convicted of a crime unless the act committed is within both the letter and the spirit of a penal statute. The speed of automobiles, bicycles and other means or vehicles of conveyance cannot be regulated by an ordinance which was clearly intended to apply only to those conveyances which are drawn by horses, mules or other beasts.—Criminal Court of Appeals of Oklahoma, 106 P. R., 652.

Sewers—Defects—City's Liability

Whitten et al. vs. City of Haverhill.—While a city is not liable for negligence in the plan of a sewer, it is liable for injuries caused by a sewer which is so constructed as to empty on another's land. The filling up of plaintiff's flats on a navigable river, with a tide of 4 feet 6 inches, by a sewer 2 feet above mean low water, was a private wrong, so that plaintiff need not show special damages caused by the public wrong in filling up the river, in order to recover against the city. Under the colonial ordinance, title to land on a navigable river, in which the tide flows, goes to extreme low water, or to the river if the salt water entirely leaves it at low tide.—Supreme Judicial Court of Massachusetts, 90 N. E. R., 409.

Ordinance Regulating Weight of Bread Is Valid

City of Chicago vs. Schmidinger.—City and Village Act gives cities the power to regulate the sale of bread, and to prescribe the weight of bread in the loaf. A city ordinance provided that bread should be sold only in loaves of certain weights, and that each loaf should bear a label showing the weight of the loaf, and name and address of the maker. Held, that the ordinance was not unconstitutional as a deprivation of property without due process of law, by violating the right to freely contract. An ordinance, requiring all loaves of bread offered for sale to be so labeled as to show the weight of the loaf, and the name of the maker, is not void as unreasonable.—Supreme Court of Illinois, 90 N. E. R., 369.

Dangerous Places in Streets—Barriers

Village of Mineral City vs. Gilbow et al.—Where one knowingly or carelessly departs from a known safe way, and goes heedlessly across the street and beyond its limits, and upon the land of an abutting owner, and is there injured by falling into an excavation, he is guilty of contributory negligence, and cannot recover.—Supreme Court of Ohio, 90 N. E. R., 800.

"Doing Work by Contract"

Perry vs. City of Los Angeles et al.—According to the ordinary acceptation of the term "doing work by contract," it means the letting of the work, or some portion thereof, to some one who agrees to deliver it completed for a specified price, and does not include the case of one who himself constructs an improvement by means of materials purchased directly by him and artisans and laborers directly employed and paid wages by him.—Supreme Court of California, 106 P. R., 410.

NEWS OF THE SOCIETIES

Lake Michigan Sanitary Association.—Legislation that will prevent pollution of the waters of Lake Michigan was advocated at the annual meeting of the Lake Michigan Sanitary Association which was held in the Great Northern Hotel, Chicago, Feb. 24. Thirty-five towns along the north shore and northern Indiana that border on the lake were represented. In the remarks that followed the election of officers discussion was divided into three sections: Suggestions regarding the north shore, the Skokie district and along the shore on the Indiana line. The speakers were Col. J. R. Kean, medical corps, U. S. A.; Major F. S. Russell, United States Museum; Major Thomas Rees, Dr. George W. Webster, president Illinois State Board of Health; Langdon Pearse, assistant engineer of the sanitary district of Chicago; Frank A. Windes and Don E. Marsh, civil engineers. It was decided to support bills now before the State Legislatures of Michigan, Indiana, Illinois and Wisconsin, suggesting remedies that will prevent pollution of the lake waters, and to empower the executive committee to take such action as is deemed advisable in furthering the interests of the association in an educational campaign with the public and among State legislators. The following officers were elected: President, Dr. George W. Webster, Chicago; first vice-president, Dr. G. A. Bading, Commissioner of Health of Milwaukee; second vice-president, Lawrence Becker, Mayor of Hammond, Ind.; secretary, W. R. Humphrey, Chicago (re-elected).

Idaho Society of Engineers.—This society was organized at Boise on February 12. It is the outgrowth of the Idaho Civil Engineers and Surveyors Association, which was formed in July, 1908. The society has been fostered largely by General Darwin A. Utter, United States Surveyor General for Idaho, who was elected the first president of the society. Other officers are: Vice-president, Rush J. White, mining engineer, Wallace; Gordon C. Smith, secretary, U. S. Deputy Surveyor, Boise; Samuel E. Clinton, Twin Falls, treasurer. The charter membership consists of 70 engineers interested in the various branches of civil, mining, electrical and mechanical engineering. The society will be a strong and conservative body, which will do much to help the upbuilding of the State and in ways that will tell in the future. It is practically certain that the Society will father certain statutory changes and new legislation in the Legislature next winter with the object of improving and strengthening the laws of the State relating to water appropriations, water power, public lands, etc. There is a large field for usefulnes for the society.

Engineers and Architects Club of Louisville.—At a meeting, February 21, J. C. Murphy read a paper illustrated with maps and drawings showing what good could be done in certain portions of the city if certain streets were extended and improved. Many new highways in the outlying districts were advocated, but the paper had special reference to the central portion of the city. He advocated a comprehensive survey of the entire city and the employment of experts to make a city plan. An exhaustive history of the founding of the city was given by Alfred Postle.

Engineers' Club of Baltimore.—The Engineers' Club held its first annual banquet at the Baltimore Country Club February 24. The occasion was the first anniversary of the Club, when about 60 members and guests attended. Mayor Mahool and engineers of the City and State departments were present, as well as the advisers of a number of big corporations. Among the speakers were Alfred M. Quick, water engineer; Swepson Earle of the Shell Fish Commission; Major James H. Harlow of the Susquehanna Power Company; W. W. Crosby, road engineer; I. O. Harpers and Jesse Slingluff. Chas. M. Phelps was toastmaster.

University of Pennsylvania Civil Engineering Society.—"Torresdale Filters" constituted the topic of discussion at the March meeting, held March 4, in the Engineering Building, Philadelphia, Pa. Duncan C. Nevins, who has been making an exhaustive study of filtration in Philadelphia, delivered a detailed report on the advantages and disadvantages of the sand-filters there. Dr. Edgar Marburg compared the Philadelphia system with those of other cities. He was followed by several engineers who had helped to build the plant. A smoker and reception followed.

International Association of Fire Engineers.—At a meeting of the Board of Directors, at Syracuse, N. Y., it was decided to hold the next annual convention at Syracuse, August 23-26. The program prepared by the board is as follows:

August 23.—Opening session at Court House; address of welcome by Mayor Schoeneck; response by member of association. Business session in afternoon.

August 24.—Testing of fire apparatus at State Armory; memorial service for chiefs who died during the year.

August 25.—Business sessions, morning, afternoon and evening.

Chief Horton, of Baltimore, was chosen to represent the association at the National Fire Protection Association at Chicago in May. Nine topics were chosen for discussion in papers by members, and six topics were selected for discussion at the convention.

County Highway Engineers' Association of Missouri.—About one hundred delegates attended the convention held at the Sexton Hotel, Kansas City, February 18. Officers for the coming year were elected as follows: B. L. Scivally, Cape Girardeau, president; J. M. Rhodes, Richmond, Mo., vice-president; Curtis Hill, State Highway Engineer, Columbia, Mo., secretary, and P. S. Quinn, Columbia, Mo., treasurer.

Chamber of Commerce of Dallas.—At a public meeting held under the auspices of the Chamber J. Horace McFarland, Harrisburg, Pa., president of the American Civic Association, delivered an address on "A Crusade Against Ugliness." Following the address President Daniel appointed a City Plan Commission of 38 citizens. A series of resolutions defined the duties of the committee to be to obtain for the city a comprehensive plan, including transportation facilities, waterfront improvement, sewer system, designation of sites for buildings and the improvement of housing conditions. Action in conjunction with the Mayor and commissioners in the employment of competent city designers and engineers is recommended to the committee. The city government is petitioned to provide funds to pay for the employment of designers and engineers.

National Association of Cement Users.—The sixth annual convention was held in Chicago, February 21-25, with about 350 members in attendance. The most important work consisted in the consideration of proposed standard specifications. The following officers were elected: President, Richard L. Humphrey, of Philadelphia, re-elected for the sixth time; first vice-president, E. S. Boyer, Catasauqua, Pa.; second vice-president, M. S. Daniels, Suffern; third vice-president, E. S. Larned, Boston; fourth vice-president, F. A. Morris, Boston. Several papers were presented on "Reinforced Concrete," but the report of the committee was not in final shape for presentation but will be published later in the Proceedings. A progress report by the committee on building laws covered questions of insurance and fireproofing. The clause in the proposed regulations regarding high carbon steel was modified so as to allow an elastic limit of 50,000 to 65,000 pounds per square inch. The clause providing for a minimum of 2 inches of fireproofing outside the main reinforcement of columns, 1½ inch on beams and 1 inch on floor slabs, after considerable discussion was retained. A partial report on the exterior treatment of concrete surfaces was made by L. C. Watson, chairman of the committee. Tooling of the surface of concrete was considered as objectionable, as the ordinary exposed surface is generally denser and less permeable to water. It was stated that all cement surfaces craze, the more dense the surface the greater the crazing. Waterproofing the surface with hydrated lime or clay does not stop crazing, but since dirt does not lodge in the cracks so easily they do not show so quickly. Even surfaces which have been scrubbed to expose the aggregate are subject to crazing, but the lines run around the exposed larger particles and thus are not so easily noticed. The annual address of President Humphries dealt largely with the subject of exterior finish. From recent personal investigations he thought that America had considerable to learn from Europe. Standard specifications on sidewalks and roadways were presented by the committee having the matter in charge. In the course of the discussion it appeared that flattening with a wooden float was the favorite way of finishing the surface in roadway pavements. The City Engineer of Richmond, Ind., F. R. Charles, presented a paper describing a pavement laid in 1896 which had proved satisfactory in use and had cost nothing for repairs. The Cement Show, conducted simultaneously with the convention, contained the exhibits of 250 individuals or companies. It included concrete mixers and buckets, sand and gravel washing machines, compounds and systems for making concrete waterproof, drain tile machinery, rock crushers and pulverizers, reinforcing material and miscellaneous contractors' equipment.

North Dakota Good Roads Association.—Secretary Ed Litton, Larimore, has announced that the annual meeting will be held in Fargo in June.

Minneapolis Publicity Club.—At a recent meeting the executive committee decided that the club should support the report of Dr. Rudolph Hering on the city's pure water problem. A campaign of education will be carried on to enlist the support of citizens generally.

Calendar of Meetings

March 9-11.

Iowa Association of Cement Users.—Annual meeting, Cedar Rapids, Ia.—Ira A. Williams, Secretary, Iowa State College, Ames, Ia.

March 16.

American Society of Civil Engineers.—Regular meeting, Society House, New York.—Charles Warren Hunt, Secretary, 220 W. 57th st., New York, N. Y.

April 26-30.

American Water Works Association.—Thirtieth annual convention, Gruenwald Hotel, New Orleans, La.—J. M. Diven, Secretary, Charleston, S. C.

May 6-7.

Appalachian Engineering Association. Annual meeting, Winston-Salem, N. C.—Harry M. Payne, Secretary, Morgentown, W. Va.

June 22-24.

Indiana Municipal League.—Annual Convention, Richmond.—Baltz A. Bescher, Secretary, Richmond, Ind.

August 23-26.

International Association of Fire Engineers.—Annual Convention, Syracuse, N. Y.—James McFall, Secretary, Roanoke, Va.

October 11-16.

American Society of Municipal Improvements.—Seventeenth annual convention, Erie, Pa.—A. Prescott Folwell, Secretary, 239 W. 39th st., New York, N. Y.

PERSONALS

ADAMS, MISS KATE J., Chicago, Ill., has been appointed as Secretary to Chief of Police Steward of Chicago, with the rank of Lieutenant, and will have the power, rank and pay of the office.

BARTE, E. A., Belington, W. Va., has been elected Mayor over G. M. Right; G. E. Cain, Recorder, and J. A. Viquesney, J. E. Keyser, Charles Brandenburg and Henry Phillips, Councilmen.

BELL, JAMES, City Engineer of St. Thomas, Ont., Can., for 25 years, has resigned, the resignation, however, not to become effective until the end of the year.

BOSTAPH, W. M., Ogden, Utah, has been elected City Engineer, succeeding A. F. Parker, who has recently resigned the office after 12 years official service in order to engage in private practice at 380 Twenty-fifth Street, Ogden.

DAWLEY, FRANK R., Mayor of Montpelier, Vt., has been elected for a third term without opposition.

ELLIOTT, BENJAMIN F., Fort Wayne, Ind., who was appointed Captain of Police by Mayor Jesse Grice on January 1, has been promoted to Chief, vice William F. Borgman, resigned, and Detective Robert Dickson, has been promoted to Captain of Police.

GERBER, W. L., Mayor of Fort Madison, Ia., died recently, aged 52 years.

GLIDDEN, HOMER W., Architect, and Edward Baruch, Consulting Chemical Engineer, have opened a joint office in the Wright & Callender Building, Los Angeles, Cal.

HAYDON, C. E., Supervising Engineer for Bowie County, Texas, and previously City Engineer of Sherman, Tex., for seven years, has been chosen City Engineer of Texarkana, Tex., succeeding H. B. DeForbes, who recently resigned to assume the general management of the construction work on roads for the Maxcy Company.

HERBERT, ALEX., Lafayette, La., has been chosen as Mayor for the term beginning next May, Felix Foreman, Marshal, and the following Board of Aldermen: Luke LeBlanc, Joseph Sonnier and Leo Bernard.

JAMESON, JOSHUA, Chief Inspector of the Sewerage Works recently completed at East Rutherford and Carlstadt, N. J., has been appointed Superintendent of the sewerage system at Washington, N. J., for the Union Building & Construction Company, of Passaic.

KELLEHER, WILLIAM A., Lawrence, Mass., former State Representative, has been made City Treasurer, succeeding William N. Hamel; Everett W. Blair is the new Assistant Treasurer.

KOCHENDERFER, J. N., Elkins, W. Va., defeated Boyd Wees, the "Dry" candidate for Mayor by 42 votes, but the "dry" forces control Council, 7 to 3; new Councilmen elected follow: T. R. Whiteman, J. W. Reitz, M. F. Decker, E. F. Everhart and H. W. Daniels.

LANCER, GEORGE H., Phoebus, Va., has been, elected Chief of the Fire Department; John Ferber, Assistant, and George P. Smith, Secretary.

LEHAN, TIMOTHY, Chief of the Fire Department of Louisville, Ky., has been presented with a handsome diamond-studden badge by Attorney Robert T. Burke on behalf of many friends.

MCCREE, GEORGE, Totowa, N. J., a member of Totowa Borough Volunteer Fire Company, has been elected Chief and Thomas Dunkerley, of Lincoln Fire Company, Assistant Chief, and a truce brought about by the two companies.

MORGAN, JAMES E., Street and Water Commissioner of Fairmont, W. Va., has resigned.

MORROW, E. S., City Comptroller of Pittsburg, Pa., Edward M. Bigelow, Civil Engineer and former Director of Public Works, and W. D. Grimes, an attorney have been named by Mayor William A. Magee as a Tree Commission, a body authorized by the Legislature two years ago.

PRINCE & IZETT, Consulting Engineers, Denver, Col., have moved their offices to the Armstrong Building, 1520 Champa Street, Denver.

SHOMAKER, GEORGE, Chief of Police of Fairmont, W. Va., resigned following the suspension of two Patrolmen, and A. C. Ross, Patrolman, has been appointed by Council as Acting Chief.

SLOAN, DAVID, has been appointed Consulting Engineer and W. G. Sloan Chief Engineer of the MacArthur Brothers Company, contractors, New York and Chicago.

STARR, S. A., Alpine, Tex., has been elected Mayor, without opposition, also the following other officers: Marshal, R. D. Shields; Aldermen: W. A. Weakley, F. E. Gillett, P. G. Vogt, H. C. Phillips and John Young.

INCORPORATIONS

Almahar Construction Co., Albany, N. Y.; general contracting business for repair of public highways; capital, $10,000. Incorporators: John F. Brady, Humboldt Schlesinger and Thomas J. Burns, all of Albany, N. Y.

Corlear Construction Co., Schenectady, John E. Springer, 1407 Albany street, N. Y.; general contractors; bridges, railways, etc.; capital, $20,000. Incorporators: Schenectady, N. Y.; James J. Quirk, 712 Hamilton street, Schenectady, N. Y., and James C. Parker, 2 Lowell Road, Schenectady, N. Y.

Interstate Contracting Co., Jersey City, N. J.; general contractors and engineers; capital, $125,000. Incorporators: Stockton Randolph Ferris, J. H. Chris. Mitchel, Francis J. Anderson, all of Jersey City.

Johnson Valley Coal and Light Co., Middletown, Ill.; mining coal and operating electric light plant; capital, $10,000. Incorporators: C. F. Johnson, E. L. Bush, H. C. Johnson, E. L. Beebe.

Mohawk Engineering and Construction Co., Highland, Ulster Co., N. Y.; general contractors, railways, etc.; capital, $10,000. Incorporators: Harry A. Sylvester, 132 Clinton street, Schenectady, N. Y.; Andrew W. Lent, 60 Second street, Newburgh, N. Y., and Harold A. Lent, Highland, Ulster Co., N. Y.

Postville Light & Heat Co., Postville, Iowa; capital stock, $25,000. Incorporators: Noble Wilcox, B. N. Allen, J. C. Murray.

TRADE NOTES

Cast Iron Pipe.—Chicago: Quotations: 4-inch, $28.50; 6 to 12-inch, $27.50; 16-inch and up, $26.50. Birmingham: Bad weather deferred shipments to the Northwest and has caused some accumulation in yards, yet producers are more inclined to increase than decrease their output. Quotations: 4 to 6-inch, $25; 8 to 12-inch, $24. San Francisco: Conditions are encouraging for spring business and tonnage is increasing. Quotations: 6 to 12-inch, $36. New York: Quotations: 6-inch, $25.50 to $26.

Lead.—Market is steady, with prices tending upward. New York: 4.60c to 4.70c. St. Louis: 4.40c. to 4.475c.

Cement in Water Works Construction.—A bulletin of the Lehigh Portland Cement Company, Indianapolis, Ind., gives an account of the construction of the new water works of the Louisville Water Company, in which 33,000 cubic yards of Portland cement concrete was used. Lehigh Portland cement was used to the extent of 18,000 barrels. The mixture of the concrete used in all branches of the work was 1—2—4, and that the aggregates used were washed and screened river sand and crushed limestone, of which material there were excavated from the site of the clear water reservoir over 48,000 cubic yards, which was crushed to one inch and under size, the dust resulting from the crushing being required to be left in for the purpose of securing a dense concrete, which would be impervious to water.

Old Equipment.—The Barron & Cole Company, corner Franklin street and West Broadway, New York City, owing to the increased demand in second-hand contractors' equipment, are opening up a special department to handle this particular line, and have put George E. Ray, formerly of The Russell Contracting Company, also of this city, in charge as manager.

Flush Tanks.—Thirty-one Merritt Siphon Flush Tanks, a new form of combined manhole and flush tank, are now being installed at Minneapolis, Kan., by the R. J. & W. M. Boyd Construction Company, of Kansas City, Mo., in a sewerage system designed by Burns & McDonnell, consulting engineers of Kansas City, Mo. These tanks are so constructed that the flushing siphons may be set after the masonry has been completed and the tanks have been covered in. The flushing siphon requires no trap set in masonry, but is brought into action by means of a pilot air pipe, which is carried above the flow line in the tank, so that no flow of liquid through it is possible, and it cannot be put out of service by floating matters in the flush water. These siphons may be relied upon to operate with the smallest possible feed, inasmuch as their action is not dependent only upon shortening the air binding column of water, but has the advantage of equilibrium, being upset by lightening this column with air, which the rise of water in the tank forces into it. A useful feature of this combined manhole and flush tank is that a light or ball can be placed in the mouth of the sewer at any time, notwithstanding that the tank is partially filled with water. Should a sewer rod be required, this can be inserted by merely removing a terra cotta plug. They are manufactured by Merritt & Co., of Camden, N. J., manufacturers and specialists in sewage raising, sewage disposal and sewer flushing devices.

Power Merger.—Plans for a big merger of Michigan power companies are announced in the application of the Commonwealth Power Co. to the State Railroad Commission for authority to increase its capital stock from $7,500,000 to $12,500,000, and issue $35,000,000 in gold bonds in carrying out the scheme to merge into the Consumers' Power Co., the Commonwealth (which controls in Kalamazoo), Grand Rapids, Muskegon, Grand Haven, Edison, Jackson Light and Power, Pontiac Power, Flint Electric Power, Saginaw Power, Bay City Power and Au Sable Power companies. The hearings will be heard early in March and Attorney General Bird will represent the State and it is probable that several cities will be represented as well, because of their interest in the merger and its future. It is announced that other companies will be listed at the hearings for a part of the merger. The application is signed W. A. Foote, of Jackson, president of the Commonwealth Co.

Asbestos Goods.—The H. W. Johns-Manville Company, manufacturer of asbestos and other materials and extensively engaged in the railroad supply business at 171-173 Randolph street, and with a large warehouse on Erie street, Chicago, has secured a ten-year lease of the four-story and basement building at 27-29 Michigan avenue, where it will remove about March 1. Rapidly increasing business and the constant addition of new lines of materials, with the expectation that a consolidation of its offices and warehouse will greatly facilitate the handling of business and give more perfect satisfaction to customers, are the reasons given by the company for changing its location. The company will install its general offices and selling departments as well as a retail department and a spacious showroom on the first floor of its new quarters. The accounting department will be located on the second floor, and the remainder of the building will be utilized for storage purposes.

Steam Shovels.—The plant of the Toledo Iron Works Co., Toledo, O., will be removed to Evansville, Ind., where steam shovels will be manufactured. The company will spend about $250,000 on the new buildings at Evansville.

Motor Fire Apparatus.—The Webb Motor Fire Apparatus Company has engaged its capital and will move to St. Louis, where a factory will be located on Washington avenue. D. B. Blossom, St. Louis, will become the acting head of the company.

MUNICIPAL APPLIANCES

Largest Rubber Hose

WHAT is claimed to be the largest rubber suction hose ever manufactured was recently made in the plant of the Combination Rubber Manufacturing Company, Bloomfield, N. J. The hose, which was shipped to a large dredging company in Philadelphia, has an inside

LARGEST RUBBER HOSE IN THE WORLD

diameter of 29 in. and an outside diameter of 33 in. In its construction 1,290 lb. of spiral spring steel was used, together with 3,210 lb. of rubber and fabric. In forming the spiral spring for the foundation of the hose, a cold rolled steel rod 1 in. in diameter was used. Pure rubber in sheet form was applied to the spring by hand, encasing it inside and outside. The outside of the hose was then completed with alternate layers of duck and rubber with a coating of gum. The entire piece of tubing was afterward placed in a steel container, and was vulcanized with the aid of live steam. The hose will be used in deep water dredging operations.

New Twelve-Ton Road Roller

A NEW steam road roller has been put on the market by the Geiser Manufacturing Company, Waynesboro, Pa., for which unusual stability on rough and sloping ground and in making turns is claimed. The boiler capacity is claimed to be ample, and the engines are double cylinder, insuring positive starting as soon as the throttle is opened. The gears are arranged on the double drive plan, resulting in the application of equal driving force for each of the rear or driving rollers. A compensating gear arrangement makes the power distribution sure, even when the roller is making a turn. The location of the center of gravity of the roller is comparatively low down, giving stability, but the novel and patented front truck construction is the device claimed to give unusual stability. Because of this new truck and the short wheelbase, sharp turns may be made without danger of upsetting. The steering gear is positive, there being no slack in the steering connections, no matter what the position of the front roller. The worm and worm wheel of the steering mechanism are immersed in oil in a tight box. The width of the roller is narrow, so that it can operate to advantage on narrow roadways.

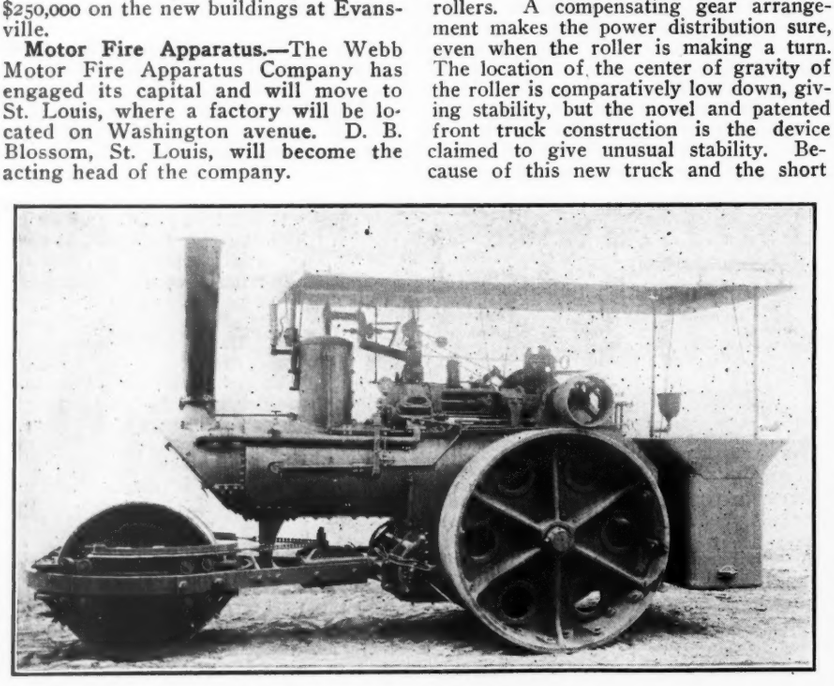
The following are among the important details of construction:

Double cylinder, each 6 in. bore by 7½ in. stroke. Revolutions of engine shaft per minute, 280. Maximum indicated horse power for 160 lbs. boiler pressure, 280 revolutions and 68.8% cut off is 72. Cut off is variable with the position of the reverse lever, and latest possible cut off is 68.8% of the length of the stroke of the piston. Piston valves 1¾ in. diameter are used. Best open hearth steel gear is used and it is double drive. Springs are incorporated in the compensating gear arrangement and insure equal load distribution for the different pinions of this arrangement, and ability to absorb shocks, without injury to the construction. All gearing is encased in practically dust proof casings. Countershaft is 4½ in. diameter in boxes. Driving axle is 5 in. diameter in boxes. Front roller axle is 4¼ in. diameter in hubs of rollers. Steering hand wheel shaft is 1⅛ in. diameter. Each driving roller is 20 in. face, and 64 in. diameter. Driving rollers are tapered, the inside edge having a diameter of 63 in. while the outer edge is 64 in. diameter. Each driving roller is equipped with 24 tempered removable steel spurs. The front rollers are two in number, each with a straight face of 20 in. and a diameter of 44 in. For all the scrapers the holding on power is transmitted through springs, these producing the elasticity necessary to compensate for clearance caused by worn bearings. The scrapers for the driving rollers are operated by hand levers, each lever actuating two scrapers at a time.

Main tank holds 107 gallons. Each side tank holds 70 gallons so that the total tank capacity is 247 gallons. Coal box capacity neat, 475 lbs.; heaped, 700 lbs. Length of roller over all, 18 ft. 3¼ in. Distance from center of driving axle to center of front roller, 9 ft. 8 in. Width from outside face to outside face of driving rollers, 6 ft. Height of smoke stack above ground, 9 ft. 11 in. Total weight of roller empty, 24,560 lbs. Driving wheel pressures on ground for empty roller, 8,730 lbs. Front roller pressure on ground for empty roller, 7,100 lbs. Total weight of roller in working condition of roller, 10,650 lbs. Front wheels pressure on ground for working condition of roller, 6,700 lbs. The roller will make 2.178 miles per hour for governor speed, that is for 280 revolutions of engine shaft.

Length of flues, 51 in. Number of flues, 59. Diameter of flues, 1½ in. Height of fire box above grate, 31⅝ in. Width of fire box, 20⅞ in. Length of fire box, 28 in. Total heating surface, 121½ sq. ft. Outside diameter of barrel of boiler, 26 in. Grate area, 4.068 sq. ft. Barrel sheet, wagon top sheet, front flue sheet, dome sheet, dome head, reinforcement sheet for dome and front side wings, all ⅜ in. thick. Fire zox flue sheet, rear side wings and top wing are ½ in. thick and all other boiler sheets are 5/16 in. thick. All stay bolts are 15/16 in. diameter spaced not more than 4½ in. apart. All braces for heads, 1⅛ in. diameter; all rivets ¾-in. diameter, except those joining fire box and fire door rings to boiler, which rivets are ⅝ in. diameter. Longitudinal barrel seam, girth seam of throat sheet, seam between throat sheet and wagon top and between side and top wings and wagon top are double riveted, all other seams are single riveted. Boiler filled to proper water line contains about 110 gallons. Boiler is equipped with one 1¼-in safety valve set at 160 lbs. with 1-in. pipe connection; with two No. 4 U. S. injectors with ¾-in. pipe connections; and with one whistle of 3-in. bell and 1-in. pipe connections.

Stationary drive for driving a rock crusher is obtained by means of a leathered pulley 15 in. in diameter and 9 in. face. This pulley is mounted on the overhanging end of engine shaft, and has a key integral with its hub, made to fit that keyway in the engine shaft which served the engine shaft pinion. The pulley is pushed up against this pinion in its out-of-gear position, and is kept from slipping endwise on the shaft by a set screw. In this position the inside edge of the pulley rim comes only 3½ in. from the outer face of the engine shaft box and also in line with the inner edge of the left hand driving roller. The belt is run backward over the left hand coal box, which in order to allow proper room for the belt is made collapsible.

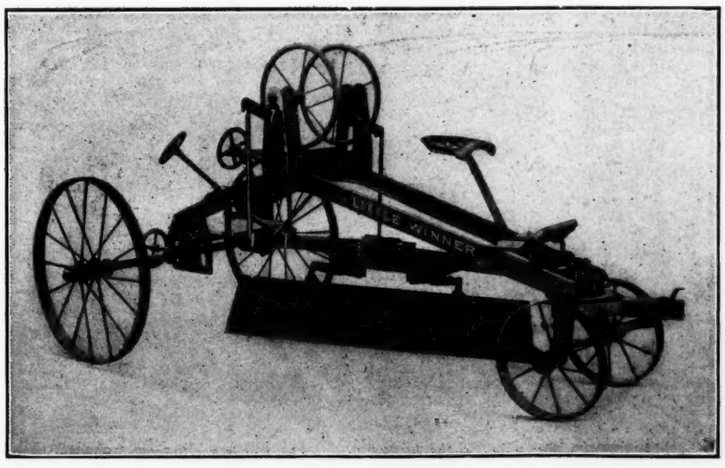


GEISER STEAM ROLLER NOVEL TURNING GEAR

Light Weight Road Grader

THE Little Winner Reversible Road Grader has been put on the market to meet the demand for a durable, practical, easily operated and efficient two-horse road grader and is claimed by the manufacturers to meet the requirements more fully than any other machine of its class. It is not intended to replace the standard reversible machines, but to work in conjunction with them. It can be used with the most satisfactory results in all work of light road building, such as cleaning ditches, grading, leveling and smoothing roads, streets and drives, and digging ditches in light soil.

With the exception of a few parts which take no particular strain, steel and malleable iron are used exclusively in the construction of "The Little Winner." The best materials, coupled with a proper distribution of same, serve to make this machine of exceptional strength. The blade-raising adjustment is made by a very simple mechanism in which the self-locking worm and gear system is used, thus doing away with objectionable foot pedals, latches, springs, etc. A long solid round steel axle is used, on which the frame of the machine can be shifted, allowing the wheels to be kept up to the bank in making first and second cuts. The axle can also be pivoted, by which adjustment the rear wheels are set in a position to crowd the machine to the roll of the dirt; this prevents side draft or slipping. The mouldboard and blade are 6 feet long and are made of high carbon steel, highly polished, and with proper curvature to insure free movement of the earth. It can be set at any angle desired, in fact can be reversed clear around so that the machine can be used as a light roller, if desired, for smoothing down the clods, thus enabling the operator to nicely finish up his work. The inclination of the blade can be changed to various scraping and cutting angles; this insures best possible results. The blade can be shifted to a cutting angle 20 inches outside of the rear wheels. This adjustment likewise being made by worm and gear system is self-locking. In the draw bars a spring is provided to take all sudden jars, thereby protecting horses and machine in the event of striking an obstruction. The wheels are of the best steel; the rear ones 42 and the front ones 22 inches in diameter. The "Little Winner" is made by the Good Roads Machinery Company, Kennett Square, Pa.

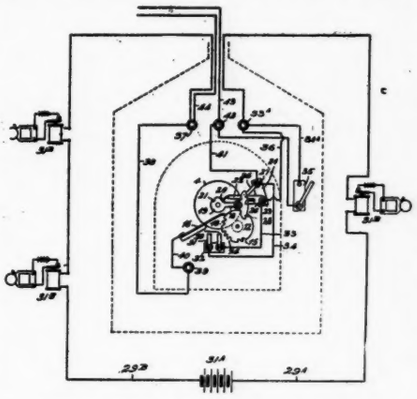


LITTLE WINNER REVERSIBLE ROAD GRADER

PATENT CLAIMS

949,970. ELECTRICALLY - OPERATED NON-INTERFERING ALARM CALL-BOX. Peabody A. Brown, Denver, Col. Serial No. 475,441.

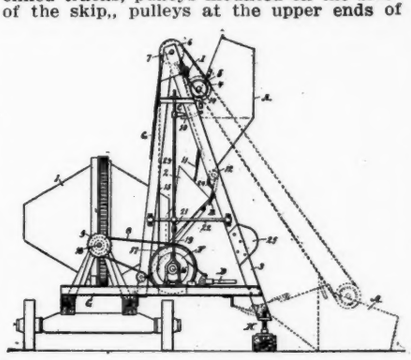
In an automatic electrically operating alarm call-box, a suitable box provided with a latching door, spring controlled to fly open when said latch is operated to release said door, a transparent and breakable seal over said latch adapted to protect said latch against manipulation except when said seal is broken, a combined spring and electrically operating bell ringing



mechanism in said box in operative circuit relation with a relay bell ringing circuit, means for winding and setting said mechanism in an operative alarm calling position, and means connected with said door for releasing said mechanism when said seal is broken and said latch is manipulated to release said door.

950,122. PORTABLE SIDE-LOADING DEVICE FOR MIXING-MACHINES. Thomas L. Smith, Milwaukee, Wis. Serial No. 375,602.

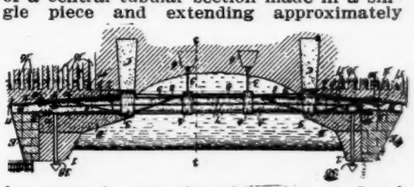
A portable side loading device, comprising a derrick, inclined tracks thereon, a skip having wheels for engaging the inclined tracks, pulleys mounted on the sides of the skip,, pulleys at the upper ends of



the derrick, equalizing pulleys near the upper end of the derrick, a hoist, and a cable passing from the hoist over the pulleys at the upper end of the derrick and around the pulleys on the skip, and around the equalizing pulleys.

949,791. SUBMERGED BRIDGE. William Blanchard, New Orleans, La. Serial No. 493,217.

In a submerged bridge, the combination of a central tubular section made in a single piece and extending approximately



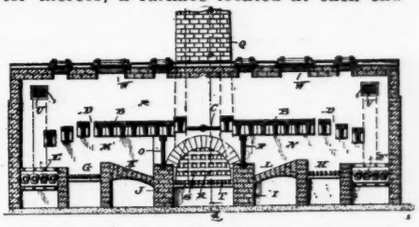
from one shore to the other of the body of water to be bridged, supporting piers arranged only at the ends of the said section, and shore sections secured to the central section.

950,149. CONCRETE SEWER. Guillaume Dujardin, Huy, Belgium. Serial No. 515,481.

A sewer made of several pieces of concrete comprising in combination a bottom piece, two side-pieces and an arched top-piece, a metal reinforcement embedded in the material of each piece and formed of horizontal bars and bars arranged at right angles to the horizontal bars, hooks on the projecting ends of the second named bars, and dovetail recesses around said hooks and extending to about the middle of the thickness of the wall, substantially as and for the purpose set forth.

950,192. GARBAGE CREMATORY OR INCINERATOR. Fred P. Smith, Chicago, Ill., assignor of one-half to Edward C. Lewis, Chicago, Ill., and John H. Kitchen, Kansas City, Mo., Copartners. Serial No. 465,595.

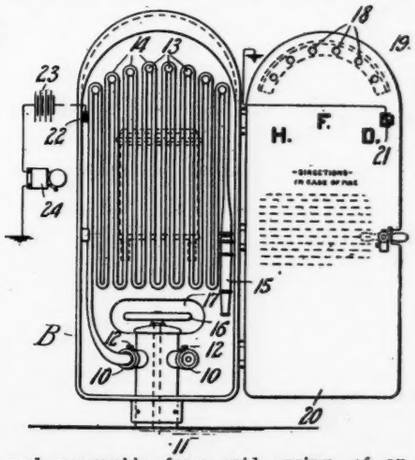
In an apparatus of the character specified, the combination of a combustion chamber having a floor extending transversely of the structure and terminating short of the end walls, said floor having an opening therein at approximately the center thereof; a furnace located at each end



of the floor and at a point below the same; a damper controlling the opening in the floor; a stack communicating with the space beneath the floor; and a pair of dampers controlling the passage of the products of combustion from the furnaces as they pass beneath the floor to the stack.

950,300. FIRE-HYDRANT. George A. Owen and George A. Bates, Hartford, Conn. Serial No. 449,608.

The combination with a hydrant, a hose receptacle secured thereto provided with a door for closing said receptacle and a hose connected with the hydrant stored within



and removable from said casing, of an electric circuit including an alarm signal, means carried by said door for automatically actuating said signal during the opening movement of the door, and an additional and independent fire alarm actuating means in a closure therefor mounted on the hydrant supported casing.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles, where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

ROADS AND PAVEMENTS

Highway Improvement in Saskatchewan. By A. J. McPherson. 1½ pp., Western Municipal News, February. 10 cts.

Notes on State Highway Work in 1909. 1½ pp., Engineering-Contracting, Feb. 9. 10 cts.

Work of the Massachusetts Highway Commission in 1909. 1½ pp., Engineering Record, Feb. 5. 10 cts.

New York Highway System. Illustrated, 11 pp., Good Roads, February. 10 cts.

Progress in Road Building in Maryland. By W. W. Crosby. Illustrated, 2 pp., Good Roads, February. 10 cts.

Road Work in East Tennessee. By M. O. Eldridge. Illustrated, 4½ pp., Good Roads, February. 10 cts.

Road Materials and Progress in Oklahoma. By J. B. Gibbins. Illustrated, 1½ pp., Good Roads, February. 10 cts.

Notes on the Construction of Macadam Pavement and a Table Showing the Amount of Stone Required. By G. D. Pike. ½ p., Engineering-Contracting, Feb. 9. 10 cts.

Road Tests at Cornell University, Comparative. Illustrated, 2 pp., Municipal Engineering, February. 25 cts.

Motor and Horse Drawn Vehicles on Roads, Effect of. Paper before National Legislative Convention. By L. W. Page. 1 1-3 pp., Engineering Record, Feb. 26. 10 cts.

Rollers and Steam Traction Engines, Directions for Working Steam Road. 2 1-3 pp., Engineering-Contracting, Feb. 16. 10 cts.

Bituminous Highway Construction. Paper before Indiana Engineering Society. By C. A. Kenyon. 3 pp., Municipal Engineering, February. 25 cts.; 2½ pp., Good Roads, February. 10 cts.

Tar as Applied to the Surface Treatment of Roads. Paper before American Gas Institute. By H. J. Skinner. 2 pp., American Gas Light Journal, Feb. 14. 10 cts.

English Methods of Using Tar as a Binder in Macadam Road Construction. 2-3 p., Engineering-Contracting, Feb. 16. 10 cts.

The Use of Tar for Road Making and Repairs. Paper before Institution of Municipal Engineers. By Wm. Wade. 2-3 p., Contract Journal, Feb. 16. 20 cts.

Asphaltic Oil Binder, Macadam Pavement with. By S. J. Van Ornum. 4 pp., Pacific Municipalities, January. 10 cts.

Resurfacing Roads in East Orange. Use of oil during the year 1909. ¼ p. Municipal Journal and Engineer, March 2. 25 cts.

Street Paving, Notes on. Paper before Central Electric Railway Association. By T. B. McMath. Illustrated, 1 p., Electric Railway Journal, Feb. 5. 10 cts.

Workmanship vs. Material in Street Paving. Paper before Illinois Society of Engineers and Surveyors. By W. W. Marr. ½ p. Contractor, Feb. 1, 20 cts.

Method of Measuring and Charging for Replacing Street Pavement in Chicago. 1 p., Electric Railway Journal, Feb. 19. 10 cts.

Economics of Street Pavements. Comparison of different kinds of pavements on basis of ultimate total cost. From report to Boston Finance Commission by Sam'l Whinery. 2½ pp., Municipal Journal and Engineer, March 2. 25 cts.

Pavement Statistics. Explanation of statistical tables. ½ p., Municipal Journal and Engineer, March 2. 25 cts.

Statistics of Paving. Amount of paving done in 1909, and totals to date. 10 pp., Municipal Journal and Engineer, March 2. 25 cts.

Crowns of Pavements. Paper before American Society of Municipal Improvements. By G. C. Warren. 2½ pp., Municipal Engineering, February. 25 cts.

Wood Paving Block Specifications. Adopted by Highway Engineers of New York. Result of conference of engineers and manufacturers. Admitting general competition. 1 p., Municipal Journal and Engineer, March 2. 25 cts.

Asphalt Block Paving in Toledo. Composition of blocks. Specifications for manufacturing and laying. Improved methods of construction and inspection. By F. I. Consaul. Illustrated, 3 pp., Municipal Journal and Engineer, March 2. 25 cts.

Granite Block Pavements, Smooth. Laid last year in Newark, N. J. Difficulties encountered in obtaining granite blocks to meet specifications. New and old specifications. Similar work in other cities. Costs of work. Location of granite quarries. By W. A. Howell, Engineer, Department Streets and Highways, Newark. 3 pp., Municipal Journal and Engineer, March 2. 25 cts.

Redressing Granite Paving Blocks. Repaving a portion of Webster avenue, Bronx Borough, with old blocks recut and relaid. By S. C. Thompson, Engineer of Highways, Bronx. Illustrated, 2 pp., Municipal Journal and Engineer, March 2. 25 cts.

Brick Pavements in Ohio. Brief historical sketch and present methods of construction of street pavements, principally brick, in Cleveland and Columbus, in Cuyahoga County and in the State. Illustrated, 12½ pp., Municipal Journal and Engineer, March 2. 25 cts.

Paving Block Inspection at the Manufacturing Plant. From paper before National Paving Brick Manufacturers' Association. By W. A. Aiken. 2 pp., Municipal Engineering, March. 25 cts.

Detailed Cost of Construction of 2,070 Square Yards of Brick Pavement at Carlisle, Pa. By C. A. Bingham. ½ p., Engineering-Contracting, Feb. 2. 10 cts.

Brick Paved Highways. Paper before National Paving Brick Manufacturers' Association. By W. P. Blair. 1½ pp., Clay-Worker, February. 25 cts.

Importance of Proper Details in Brick Street Construction. 2 pp., Good Roads, February. 10 cts.

Block Paving, Modern. Tendency towards improved block paving the feature of 1910. 3-4 p., Municipal Journal and Engineer, March 2. 25 cts.

Asphalt Repairing in St. Augustine. Use of the Hooke portable plant. Illustrated, 3-4 p., Municipal Journal and Engineer, March 2. 25 cts.

Indianapolis Asphalt Plant. Report for the year 1909. Costs. 2-3 p., Municipal Journal and Engineer, Feb. 9. 10 cts.

Work of a Municipal Asphalt Plant of San Francisco in 1909. 2-3 p., Engineering-Contracting, Feb. 16. 10 cts.

Detroit Municipal Asphalt Plant. Costs of operating and quantity of work done. Saving effected by the city. By Len G. Shaw. 3-4 p., Municipal Journal and Engineer, March 2. 25 cts.

Cement as a Road Material, Possibilities of. Paper before Association of American Portland Cement Manufacturers. By L. W. Page. 1½ pp., Surveyor, Feb. 18. 20 cts.

The Possibilities of Portland Cement as a Road Material. Paper before Association of Portland Cement Manufacturers. Rock Products, Jan. 22. 10 cts.; 1½ pp., Contract Record, Jan. 26. 10 cts.; 3 pp., Cement, January. 25 cts.

Concrete Cubes, Experimental Road Surfacing of 2-inch. Paper before National Association of Cement Users. By J. Y. McClintock and G. C. Wright. Illustrated, 2-3 p., Engineering News, March 3. 15 cts.

Possibilities of the Use of Mineral Oils Mixed with Concrete. By Albert Moyer. 2 pp., Municipal Engineering, February. 25 cts.

Specifications, Standard Paving. Proceedings of the convention at Chicago called for the purpose of standardizing specifications. 2 pp., Municipal Journal and Engineer, March 2. 25 cts.

Standardizing Paving Block Specifications. Results of recent conferences of city officials in New York and Chicago. 1 p., Municipal Journal and Engineer, Feb. 23. 10 cts.

Maintenance Along Street Railway Tracks, Pavement. Paper before American Society of Municipal Improvements. By F. V. P. Ellsworth. 1 p., Municipal Engineering, February. 25 cts.

Sidewalk Practice in Chicago. Paper before Illinois Society of Engineers and Surveyors. By N. E. Murray. 1 1-3 pp., Engineering News, Feb. 17. 15 cts.; 1 p., Engineering-Contracting, Feb. 9, 10 cts.; 5 pp., Cement, February. 25 cts.

How Chicago Builds Sidewalks and Their Cost. Illustrated, 3½ pp., Contractor, Feb. 15. 20 cts.

Formulæ for Sidewalks Construction Used by the Bureau of Sidewalks, Chicago. ½ p., Engineering-Contracting, Feb. 9. 10 cts.

Driveways Across Sidewalks. Suggestion from European practice by F. L. Olsted. Illustrated, 3-4 p., Municipal Journal and Engineer, Feb. 9. 10 cts.

Curb and Gutter, Proposed Standard Specifications for Cement. Report to the National Association of Cement Users. Illustrated, 1 p., Engineering-Contracting, Feb. 23. 10 cts.

Excavation Ordinance, Street. Recently passed in St. Louis. ½ p., Municipal Journal and Engineer, Feb. 9. 10 cts.

Encroachments, Street. Laws and ordinances in New York. ½ p., Municipal Journal and Engineer, March 2. 25 cts.

SEWERAGE AND SANITATION

Sewerage Problem of Greater Pittsburg. 2 pp., Engineering Record, Feb. 12. 10 cts.

Greater Pittsburg Sewerage and Sewage Purification Orders. 2 1-3 pp., Engineering News, Feb. 10. 15 cts.

Pittsburg's Sewage Purification Orders. 2-3 p., Engineering News, Feb. 10. 15 cts.

Sewerage Statistics. Approximately $250,000,000 worth of sewers in the country. Percentage of combined and of separate systems. Sewage purification, sewer flushing, house connections and pumping. 3 1-2 pp., Municipal Journal and Engineering, Feb. 2. 25 cts.

Baltimore and New Orleans Sewerage. Difference in cost of Systems. 1-4 p., Municipal Journal and Engineer, Feb. 9. 10 cts.

Leaky Sewers, Unusual Damage from. Conditions in Paris. 1-4 p., Municipal Journal and Engineer, Feb. 2. 25 cts.

The Flood in Paris. Damage due to use of sewers for other purposes than conveying sewage. Comparison of conditions in Cairo, Ill. 1 p., Municipal Journal and Engineer, Feb. 9. 10 cts.

Sewer Pipe, The Manufacture of. Illustrated, 2½ pp., Clay Worker, January. 25 cts.

Concrete Sewer Pipes. Bonna System. Illustrated, 7 pp., Water, Jan. 15. 20 cts.

Concrete Sewers at Richmond, Ind. Paper before Indiana Engineering Society. By F. R. Charles. Illustrated, 1 1-3 pp., Engineering News, Feb. 3. 15 cts.

Sewer Materials, Purchase of. From report of F. L. Ford, City Engineer, Hartford, Conn. ½ p., Municipal Journal and Engineer, Feb. 2. 25 cts.

Sewer Construction in Baltimore. General account of the construction of a thousand miles of sewers, sanitary and storm water. Description of pumping station. Illustrated, 12 pp., Municipal Journal and Engineer, Feb. 2. 25 cts.

Sewer work by Day Labor and By Contract. Comparison of the cost of efficiency. Relative prevalence of two methods of doing work. Average cost per foot in several cities. Wages, length of day and holidays. By H. P. Eddy. 4½ pp., Municipal Journal and Engineer, Feb. 2. 25 cts.

Difficult Construction of Concrete Sewer. Flood Water carried on top of sewer. Excavation in silt of drainage canal bottom. Inverted siphons. Timber forms, reinforcement, distributing concrete by troughs. By Maury Nicholson, City Engineer, Birmingham, Ala. Illustrated, 3 pp., Municipal Journal and Engineer, Feb. 9. 10 cts.

Sewer Construction in Ottawa. Building brick sewers under difficulty. Blasting rock under running sand. Handling flow of old sewer in same trench. Cost of work. Illustrated, 1½ pp., Municipal Journal and Engineer, Feb. 2. 25 cts.

Method of Trenching for a Sewer at Auburn, N. Y., Using Revolving Steam Shovel. Illustrated, 1 p., Engineering-Contracting, March 2. 10 cts.

Machinery on Sewer Work. Tendency towards its more extended use. ½ p., Municipal Journal and Engineer, Feb. 26. 10. cts.

Bureau of Sewers, Brooklyn's. Description of the only municipal sewer-pipe testing laboratory in the country. Account of the percentage system of bidding. Cost data. Rainfall and run-off observations. Cleaning sewers and catch basins. Illustrated, 6½ pp., Municipal Journal and Engineer, Feb. 2. 25 cts.

Maintenance of Chicago's Sewers, Efficiency of Day Labor. From report by B. F. Melton to the Chicago Commission on city expenditures. 1 p., Engineering-Contracting, Feb. 23. 10 cts.

Garage Waste Water in Sewers. A query as to requirements in different cities. 1-4 p., Municipal Journal and Engineer, Feb. 27. 10 cts.

Sewer Flow, Gauging. Records made by City Engineer of Toronto. Illustrated, 3-4 p., Municipal Journal and Engineer, Feb. 2. 25 cts.

Stream Pollution, Character of, as affecting Purification Plant Design. Paper before Indiana Engineering Society. By H. E. Gordan. 5 pp., Municipal Engineering, February. 25 cts.

Preliminary Report on the Investigation of the Ohio River. By Burgess, Kimberly and Long, consulting engineers. 34 pp., Quarterly Bulletin, Ohio State Board of Health, December. 25 cts.

Canadian Senate and Rivers' Pollution. 1 p., Municipal World, February. 10 cts.

Putrescibility and Stability of Sewage Effluents. Comment on paper by E. B. Phelps in the Bulletin of U. S. Geological Survey. 1 p., Water, Feb. 16. 20 cts.

Standards for Sewage Effluents. 1 p., Engineering Record, Feb. 12. 10 cts.

Purification of Sewage at the Allis-Chalmers' Plant, West Allis, Wis. Illustrated, 1 p., Engineering Record, Feb. 19. 10 cts.

Sewage Purification Works, City of Vernon, B. C. Illustrated, 1½ pp., Canadian Engineer, Feb. 11. 15 cts.

The Hampton Doctrine in Relation to Sewage Purification. By K. Imhoff. Illustrated, 3 pp., Surveyor, Feb. 4. 20 cts.

New British Sewage Disposal Works. 1½ pp., Municipal Engineering, March. 25 cts.

Principles Involved in the Purification of Sewage. Paper before Institution of Municipal Engineer. By L. W. Highnett. 2 pp., Industrial Engineering, January. 20 cts.

Sewage Disposal Works at Grand Canyon, Ariz. Illustrated, 1 1-3 pp., Engineering Record, Jan. 29. 10 cts.

Septic Tank Company's Patent Claims. 1½ pp., Canadian Engineer, Feb. 4. 15 cts.

Bacterial Treatment of Sewage. By C. E. Lawton. Paper before Institute of Sanitary Engineers. 1½ pp., Surveyor, Feb. 18. 20 cts.

Constructing Sewage Disposal Plant at Baltimore. Illustrated, 6 pp., Contractor, Feb. 1. 20 cts.

Improved Sewage Works of Columbus, O. Paper before American Society of Civil Engineers. By J. H. Gregory. Illustrated, 45 pp., Proceedings, January. $1.00.

Design and Construction of Improved Sewage Works at Columbus, O., with some Unit Costs. Illustrated, 7 pp., Engineering-Contracting, Feb. 9. 10 cts.

Filtration Scheme, Toronto's Sewage Disposal and Water. 1½ pp., Canadian Municipal Journal, February. 10 cts.

Design of Small Intermittent Sewage Filters. 1 1-3 pp., Engineering Record, Feb. 19. 10 cts.

Sewage Farm, Passadena. Methods and costs of operation during 1909. ½ p., Municipal Journal and Engineer, Feb. 16. 10 cts.

Sewage into Sugar. Sugar beets on sewage farms. Paper before Association of Managers of Sewage Disposal Works. By J. Ashton. 1 p., Surveyor, Feb. 11. 20 cts.

Manufactural Wastes and Sewage at Gloversville, Disposal of. Illustrated, 3 pp., Engineering Record, Jan. 29; 3 pp., Feb. 5, 10 cts.

Sludge Disposal Methods. Discussions of various methods in use. Conversion into fertilizer. Depositing at sea. Preparation for disposal. From paper before Municipal Institution of Municipal Engineers. By W. C. Easdale. 1 p., Municipal Journal and Engineer, Feb. 16. 10 cts.

Disinfection of Water and Sewage. Summary of results obtained from experiments and use of various disinfectants. Bleaching powder apparently best for sewage. Costs in several cities. 3-4 p., Municipal Journal and Engineer, Feb. 2. 25 cts.

Disinfection of Sewage and Sewage Filter Effluents. Paper by E. B. Phelps. Reviewed by T. A. Murray. 2 pp., Canadian Engineer, Feb. 25. 15 cts.; 2 pp., Canadian Engineer, Feb. 18. 15 cts.

Sterilization by Chloride of Lime. Data recently obtained giving efficiency as well as economy in the saving of coagulant. By James Caird. 1½ pp., Municipal Journal and Engineer, Feb. 23. 10 cts.

Health Departments, The Problems of Saskatchewan and Public. 3 pp., Canadian Engineer, Jan. 28. 15 cts.

Typhoid Fever and Water Supplies in Illinois, Relation of. Paper before Illinois Society of Engineers and Surveyors. By Edw. Bartow. 2-3 p., Engineering News, Feb. 10. 15 cts.

What the Local Health Officer can Do in the Prevention of Typhoid Fever. By L. L. Lumsden. 10 pp., Public Health Reports. Feb. 4. 10 cts.

Report on the Typhoid Epidemic at St. Lubin-en-Vergonnois. By L. Gaultier. 3 pp., La Technique Sanitaire, December. 50 cts.

Contractors' Camps, Sanitary Considerations in the Establishment of. Illustrated, 2 pp., Engineering-Contracting, Feb. 16. 10 cts.

Sanitation in Construction Camps. Even more important than in cities. What New York city and the state respectively are doing to safeguard contract laborers. Sewerage, water supply and care of sick. By L. E. Palmer. 1½ pp., Municipal Journal and Engineer, Feb. 9. 10 cts.

Proceedings of the International Sanitary Conference of the South American Republics held at San Jose, Costa Rico. By R. H. von Ezdorf. 4 pp., Public Health Reports, Feb. 25. 10 cts.

WATER SUPPLY

Water Works, Glenquey. Illustrated, 2 pp., Municipal Journal, Feb. 11. 15 cts.

New Waterworks Plant of Louisville. Illustrated, 2 pp., Fire and Water, Feb. 9. 10 cts.

Ogden City Water Works. First year of municipal operation. Excellent condition of wood stave, riveted and kalamein pipe after twenty years' service, 3-4 p., Municipal Journal and Engineer, Feb. 9. 10 cts.

Pigeon Lake Gravity Water Supply. By H. L. Seymour. Illustrated, 2 pp., Canadian Engineer, Feb. 4. 15 cts.

Water System of South Bend. By Frederick Shafer. 1 p., Fire and Water, Feb. 9. 10 cts.

Braintree Water Works Extensions. 1½ pp., Surveyor, February 18. 20 cts.

Water Supply and Treatment for Power Plant Purposes. Paper before American Water Works Association. By W. M. Booth. 6 pp., Chemical Engineer, January. 25 cts.

Improved Water Works of Columbus, O. Paper before American Society of Civil Engineers. By J. H. Gregory. Illustrated. 73 pp., Proceedings, January. $1.00.

Deep Well Water Supply at South Bend, Ind. Paper before Indiana Engineering Society. By A. J. Hammond. 3 pp., Municipal Engineering, March. 25 cts.; 1 p., Engineering Record, Jan. 29. 10 cts.

Pipe Line, Construction of a 24-mile Steel, for Portland, Ore., Water Works. Illustrated, 1 p., Engineering-Contracting, March 2. 10 cts.

Steel Pipe Lines and River Crossing, Little River Water Supply, Springfield, Mass. Illustrated, 2½ pp., Engineering Record, Feb. 19. 10 cts.

Depth of Water Pipe. From report of F. A. Barbour to New England Water Works Association. Illustrated, 2 pp., Engineering-Contracting, Feb. 16. 10 cts.

Depths of Water Pipes, American and Canadian Practice. 1 p., Municipal World, February. 10 cts.

Reservoir, Los Angeles. Banks treated with crude oil. Five acres of roof supported by concrete columns and girders. Twelfth reservoir. By E. P. Bailey. Illustrated, 1½ pp., Municipal Journal and Engineer, Feb. 16. 10 cts.

Scioto River Storage Dam and Reservoir, Columbus Water Works. From paper before American Society of Civil Engineers. By J. H. Gregory. 1 p., Engineering-Contracting, Feb. 9. 10 cts.

The Dam at Rochebut. By. H. Regnard. Illustrated, 9 pp., La Technique Sanitaire, December. 50 cts.

Service Reservoir at Baltimore. Illustrated, 2 pp., Fire and Water, Feb. 2. 10 cts.

Reinforced Concrete in Water Works Engineering. By H. J. F. Gourley. Illustrated, 4 pp., Water. Feb. 16. 20 cts.

Tunnels on the Catskill Aqueduct, Design of Pressure. 2 pp., Engineering Record, Jan. 29; Illustrated, 2 2-3 pp., Feb. 5.

Method of Making Watertight by Grouting the Yonkers Pressure Tunnel of the Catskill Aqueduct. Illustrated, 2 pp., Engineering-Contracting, Feb. 9. 10 cts.

Aqueduct Lining, Reinforced Concrete. Paper before Illinois Society of Engineers and Surveyors. By A. T. Reeves. Illustrated, 1 1-3 pp., Engineering News, Feb. 24. 15 cts.

Pumping with Gasoline Engines. From Bulletin 181, Office of Experimental Station. Illustrated, ½ p., Engineering Record, Feb. 26. 10 cts.

The Design, Construction and Operation of Centrifugal Pumps. Structural features and manufacturing considerations. By Franz zur Nedden. Illustrated, 10 pp., Engineering Magazine, February; 10 pp., March. 25 cts.

New Pumping Engine for Brooklyn, N. Y. Illustrated, 1 p., Power, March 1. 5 cts.

Lockport Motor Driven Pumps. Illustrated, ½ p., Fire and Water, Feb. 9. 10 cts.

Recent Records of High-Duty Water Works Pumping Engines. Illustrated, 1 2-3 pp., Engineering News, Feb. 3. 15 cts.

Tests of Triple Expansion Pumping Engine, at San Antonio, Tex. Illustrated, 2 pp., Power, Feb. 8. 5 cts.

Filtration, Washington's Water. 1-4 p., Municipal Journal and Engineer, Feb. 9. 10 cts.

The Maiden Creek Filters, Dam and Conduit at Reading. Illustrated, 2 pp., Engineering Record, Feb. 5. 10 cts.

Biological Filters. By B. Bezault. 6 pp., La Technique Sanitaire, December. 50 cts.

Concrete Pile Foundation for the Evansville Filters. By F. H. Stephenson. Illustrated, 1 p., Engineering Record, Feb. 19. 10 cts.

Toledo's New Water Filtration Plant. By B. M. Baker. Illustrated, 3 pp., Municipal Engineering, February. 25 cts.

Purification Works at Columbus, O., Some Costs of the New Water. Illustrated, 2 pp., Engineering-Contracting, Feb. 9. 10 cts.

Sterilizing Plant at Montreal, Water. Illustrated, 1-3 p., Engineering Record, Feb. 26. 10 cts.

Report of the Investigation of the Efficiency of the Dayton Electrolytic Cell for the Disinfection of Water and Sewage. 8 pp., Quarterly Bulletin, Ohio State Board of Health, December. 25 cts.

Coagulating Works of the St. Louis Water Department, The New. Illustrated. 6 pp. Engineering Record. Feb. 12. 10 cts.

Examination of Water, The Sanitary. By L. K. Russell. Illustrated. 6 pp., Clarkson Bulletin, January. 25 cts.

Pure Water in the Netherlands. The Progressive Decrease of Mortality Rates and the Effect of the Distribution of. 9 pp., La Technique Sanitaire, January. 50 cts.

Rates, Inequity in Water, Wisconsin Public Service Commission shows how consumers and public ought to share costs. 4 pp., Public Service, March. 20 cts.

To Probe Water Waste in Manhattan. ½ p., Fire and Water, Jan. 26. 10 cts.

Valuation of the Water Works Plant at Richmond, Ind. Paper before Indiana Water Supply Association. By H. A. Dill. 1 p., Engineering-Contracting, March 2. 10 cts.

The Evaluation of Water Rights. By Arthur Halsted. Illustrated, 1 2-3 pp., Engineering Record, Feb. 26. 10 cts.

Intake Screens, Electric Currents for Thawing Anchor Ice on. Communication from H. F. Dunham, 1-4 p., Engineering News, Feb. 24. 15 cts.

Power Plant Purposes, Water Supply and Treatment for. From paper before American Water Works Association, by W. M. Booth. 6 pp., Municipal Engineering, March. 25 cts.

Water-Powers of New York. State Conservation of. Abstract of the fifth Annual Report of the New York State Water Supply Commission. 1 p., Engineering News, Feb. 17. 15 cts.

State Conservation of New York Water Powers. 1 1-3 pp., Engineering Record, Feb. 5. 10 cts.

Relation of Forest to Stream Flow. By Major W. W. Harts. 1 p., Engineering News, March 3. 15 cts.

Influence of Forests on Climate and on Floods. By W. L. Moore. 3 pp., Engineering News, March 3. 15 cts.

Flood Controlling Works, Paxton Creek, Harrisburg, Pa. By R. M. Riegel. Illustrated. 4 pp., Engineering News, Feb. 17. 15 cts.

Filing and Indexing Drawings and Photographs, Board of Water Supply, New York City, Method of. From paper before Boston Society of Civil Engineers. By Alfred D. Flynn. 1½ pp., Engineering-Contracting, March 2. 10 cts.

STREET LIGHTING AND ELECTRIC POWER

Street Lighting Fixtures, and Incandescent Lamps. By Gilbert Mullock. Illustrated, 1½ pp., Electrical Review, Feb. 5. 10 cts.

Light on Boston Street Lighting. ½ p., Engineering Record, Feb. 19. 10 cts.

Street Lighting. Paper before Commercial Gas Association. By E. N. Wrightington. 2 pp., Progressive Age. Feb. 1. 20 cts.

The Business Side of Modern Street Illumination. By G. B. Griffin and F. A. Dimock. Illustrated, 3 pp., Illuminating Engineer, February. 20 cts.

Progress of the New Street Lighting. Illustrated, 6 pp., Illuminating Engineer, February. 20 cts.

Tungsten Lamp Tests. Results of tests made at University of Illinois. 1-4 p., Municipal Journal and Engineer, Feb. 23. 10 cts.

Tests of Tungsten Incandescent Electric Lamps. By T. H. Amrine and A. Guell, University of Illinois. ½ p., Engineering News, Feb. 24. 15 cts.

The Tungsten Lamp and Its Relations to Central Stations. By George Merrill. 3 pp., Municipal Engineering, March. 25 cts.

Arc Lamps, Modern, and Their Application. 2-3 p., Contract Journal, Feb. 16. 20 cts.

Lighting Engineering. Electrical and. By H. W. Spang. 3 pp., Water and Gas Review. February. 20 cts.

Central Stations for Towns of 1,000 Population. By C. D. Haskins. 5 pp., Municipal Engineering, March. 25 cts.

Output and Earnings of a Hydro-Electric Plant. 1½ pp. Electrical Review, Feb. 19. 10 cts.

Rates for Electric Current Furnished by the Municipal Plant of Pasadena, Cal. 1-3 p., Engineering News, Feb. 10. 15 cts.

Water Power, Valuation of. 1-3 p., Engineering Record, Feb. 5. 10 cts.

Potatoes and Power Plants. Comparison of value of water for agricultural or power purposes. German experience. ½ p., Engineering Record, Feb. 26. 10 cts.

Damage to the Electric Utilities by the Paris Flood. By A. de Courcy. Illustrated, 1 1-3 pp., Electric Review, Feb. 26. 10 cts.

Gas Power, Central Electric Station in New Windsor, Md. Illustrated, 1 p., Power, Feb. 22. 5 cts.

Technical and Mechanical Progress in the Gas Industry During the Past Twelve Months. Paper before American Gas Institute. By Irving Butterworth. 7 pp., Progressive Age, March 1. 20 cts.

FIRE AND POLICE

Fire Department of Philadelphia. Illustrated, 3 pp., Fire and Water, Feb. 23. 10 cts.

Fire Apparatus, European and American. Illustrated, 3 pp., Fire and Water, Feb. 23. 10 cts.

New Fire Boat at Seattle. ½ p., Fire and Water, Feb. 2. 10 cts.

House, A Modern Fire Truck. Novel features of a house recently completed for the use of the Washington, D. C., Fire Department. By R. B. Horton. Illustrated, 1½ pp., Municipal Journal and Engineer, Feb. 23. 10 cts.

Fire Protection of Baltimore. Result of investigation by National Board of Fire Underwriters. 2-3 p., Fire and Water, Feb. 23. 10 cts.

Fire and Water Service at Quincy. 1 p., Fire and Water, Jan. 26. 10 cts.

Fire Protection in San Francisco under the New Building Law. 1 p., Engineering News, Feb. 10. 15 cts.

Fire Hydrants, Locating. Should be close together where pressure is low. 1-4 p., Municipal Journal and Engineer, Feb. 23. 10 cts.

High-Pressure Fire Service Pumps of Manhattan Borough and Some Tests. Illustrated, 3 pp., Electrical Review, Feb. 12. 10 cts.

Flame, Chemistry of. By V. B. Lewis. 1 2-3 pp., Fire and Water, Feb. 23. 10 cts.

Police Efficiency in Towns and Rural Districts, How Best to Raise the Standard of. Paper before Chief Constables' Association of Canada. By J. D. R. Jamieson. 3 pp., Canadian Municipal Journal, February. 10 cts.

GOVERNMENT AND FINANCE

Commission, Cities Governed by a List of 49. 1-4 p., Municipal Journal and Engineer, Feb. 23. 10 cts.

Municipal Congress at Barcelona, Proceedings of the Recent. 2 pp., Revista Municipal, Feb. 15. 25 cts.

Convention of New Jersey Mayors. General objects of the meeting and outline of results accomplished. ½ p., Municipal Journal and Engineer, Feb. 16. 10 cts.

Civic Reform.—The Beast and the Jungle. Efforts to reform the election laws in Denver. By Judge Ben B. Lindsey. Illustrated, 16 pp., Everybody's, March. 15 cts.

Grand Rapids. A story of the arousing of civic interest. By John Ihder. Illustrated, 8 pp., American City, February. 10 cts.

City, The Definition of the. By Rene Maunier. 13 pp., American Journal of Sociology. January. 50 cts.

Municipal Ownership. Paper before Illinois Society of Engineers and Surveyors. By J. W. Dappert. 2 pp., Municipal Engineering, March. 25 cts.

Waste in Municipal Business. By H. P. Eddy. 3½ pp., Public Service, March. 20 cts.

California Municipal Plants. Record of past year for light, water and miscellaneous plants. 1-4 p., Municipal Journal and Engineer, Feb. 9. 10 cts.

Public Service Commissions. Paper before American Street and Interurban Railway Association. By P. F. Sullivan. 2½ pp., Public Service, March. 20 cts.

How Municipalities Should Deal With Corporations. Paper before Union of Manitoba Municipalities. By T. A. Hunt. 4 pp., Canadian Municipal Journal, February. 10 cts.

Finance Commission of Boston, Seven Months' Work of the Permanent. 1½ pp., Engineering-Contracting, Feb. 16. 10 cts.

State Administrative Supervision Over Local Accounting. By R. C. Smith. 12 pp., Journal of Accountancy, February. 25 cts.

Payments, Prompt Municipal. Improved conditions in New York. 1-4 p., Municipal Journal and Engineer, Feb. 9. 10 cts.

Depreciation, The Treatment of. By F. R. Ford. 3½ pp., Public Service, March. 20 cts.

Going Value and Good Will. Extracts from the opinion of the Wisconsin Utility Commission, in the Cashton Light and Power Company case. 4 pp., Public Service, February. 20 cts.

STREET CLEANING AND REFUSE DISPOSAL

Street Cleaning and Public Health. Comment on report of the Immigration Commission. 1-3 p., Municipal Journal and Engineer, Feb. 9. 10 cts.

Snow Removal in New York. Cost of recent work. 1-4 p., Municipal Journal and Engineer, Feb. 23. 10 cts.

Dumping Snow in Sewers. A suggestion being considered in New York. Illustrated, ½ p., Municipal Journal and Engineer, Feb. 2. 25 cts.

Scavenging and Refuse Disposal, Town. By H. S. Watson. 3 pp., Municipal Engineering, February, 2 pp., March. 25 cts.

Refuse Disposal Report, Boston. Unusually complete figures of quantities of refuse collected. Difficulties of compelling separation by householders. Advantages and cost of destructors. Form for collection and disposal contract. Illustrated, 2½ pp., Municipal Journal and Engineer, Feb. 16. 10 cts.

Collection and Disposal of Refuse in the City of Boston. Illustrated, 2 pp., Engineering News, Feb. 10. 15 cts.

Garbage Incineration in Seattle. Satisfactory operation shown by recent report. 1-4 p., Municipal Journal and Engineer, Feb. 23. 10 cts.

Amounts of Refuse.. Variations found in different sections of Boston, Mass. Query as to what quantities actually are in other American cities. ½ p., Municipal Journal and Engineer, Feb. 23. 10 cts.

TRAFFIC AND TRANSPORTATION

Street Railway Rehabilitation in Chicago, Review of the. 1 p., Electric Railway Journal, Feb. 25. 10 cts.

Tee Rail in City Streets, Use of. Paper before American Society of Municipal Improvements. By D. A. Hegarty. 1½ pp., Public Service. 20 cts.

Trackless Trolleys in Austria. 3 pp., Daily Consular Report. Feb. 5. 10 cts.

Tramways, York. Opening of the new municipal enterprise. Illustrated, 1 2-3 pp., Municipal Journal, Jan. 28. 15 cts.

Paving Along Street Railway Tracks. From paper before Central Electric Railway Association. By T. B. McMath. 2-3 p., Engineering-Contracting, Feb. 9. 10 cts. 2 pp., Municipal Engineering, March. 25 cts.

Terminals in Chicago, Proposed Rearrangement of Railway. 1½ pp., Engineering News, Feb. 24. 15 cts.

Freight Transference, Economic, at Railway Terminals and Shipping Docks. By H. M. Harding. Illustrated, 6 pp., Engineering News, March 3. 15 cts.

Fares, Electric Railway. Paper before Wisconsin Electrical Association. By J. P. Pulliam. 3-4 p., Electric Railway Journal, Jan. 29. 10 cts.

Motormen and Conductors, Selection of. By C. B. Wells. 2 pp., Public Service, February. 20 cts.

BRIDGES AND STRUCTURAL MATERIALS

Cement, Experiments on the Coarser Particles in. By G. S. Binckley. Illustrated, 1 p., Engineering Record, Feb. 19. 10 cts

Concrete, Notes on. From paper before Boston Society of Civil Engineers, by H. L. Sherman. 1 p., Engineering Record, Jan. 29. 10 cts.

The Scientific Practice of Concrete. By R. R. Newman. 3 pp., Cement Age, February. 15 cts.

Mixing Mineral Oils with Concrete. By Albert Moyer. 2½ pp., Cement World, February. 10 cts.

Concrete Mixed with Mineral Oil. By Albert Moyer. 2 pp., Concrete Engineering, February. 10 cts.

Water Proof, Making Concrete. By I. O. Baker. 2 pp., Canadian Engineer, Feb. 4. 15 cts.

I-Beam Tests, Some Deductions from Marburg's. Communication from C. J. Tildon and reply by Edgar Marburg. Illustrated, 1½ pp., Engineering News, Feb. 24. 15 cts.

Highway Bridge, Skew. One with an unusual skew at Chattanooga, Tenn. Reinforced concrete floor. Amount of dead and live loads provided for. Illustrated, 1 p., Municipal Journal and Engineer, Feb. 23. 10 cts.

Two Bridges in Berlin. By Montgomery Schuyler. Illustrated, 6 pp., Architectural Record, March. 25 cts.

New Bridges at Vancouver, B. C. Illustrated. 1 p., Contract Record, Jan. 26. 10 cts.

Types of Highway Bridges. Illustrated, 4 pp., Canadian Engineer, Feb. 18; 5 pp., Feb. 25. 15 cts.

Boylston Street Bridge, Boston, from 1888 to the Present Time. The destruction and reconstruction of a bridge subjected to locomotive fumes and increasing street car loads. By F. H. Fay, C. M. Spoffard and J. C. Moses. Paper before Boston Society of Civil Engineers. Illustrated, 40 pp., Journal of the Association of Engineering Societies, December. 30 cts.

Construction of the Evanstom Subway Bridges. By E. O. Griefenhagen. Illustrated, 2 2-3 pp., Engineering Record, Feb. 5. 10 cts.

Concrete Highway Bridge, Two-Span. By C. A. Bingham. Illustrated, ½ p., Engineering Record, Feb. 19. 10 cts.

Method and Cost of Reinforced Highway Bridge Construction under the direction of the Illinois Highway Commission. From paper before Illinois Society of Engineers and Surveyors, by A. N. Johnson. Illustrated, 2 pp., Engineering-Contracting, Feb. 2, 10 cts.; illustrated, 1 2-3 pp., Engineering Record, Feb. 5, 10 cts.; illustrated, 4 pp., Good Roads, February, 20 cts; 1 1-3 pp., Engineering News, Feb. 10, 15 cts.

Some Records of Tests of Reinforced Concrete Girder Bridges of the Illinois Highway Commission's Standard Type. 1-3 p., Engineering-Contracting, Feb. 9. 10 cts.

Reinforced Concrete Bridges for Track Elevation in Evanston. From paper before Western Society of Engineers, by E. O. Griefenhagen. Illustrated, 6 pp., Engineering-Contracting, Feb. 16. 10 cts.

Reinforced Concrete Bridges for Country Roads. By J. G. McMillan. Illustrated, 1½ pp., Municipal Engineering, March. 25 cts.

Covered Bridge of Reinforced Concrete, Southbridge, Mass. Illustrated, 3-4 p., Engineering News, Feb. 17. 15 cts.

Reinforced Concrete Bridge Construction, track elevation work, Chicago. Paper before Western Society of Engineers. By G. E. Tebbetts. Illustrated, 4 pp., Engineering-Contracting, Feb. 23. 10 cts.

Comments on Contracting for Concrete Bridges with Description of a Form of Cost Recording. From paper before American Society of Engineering Contractors. By D. B. Luten. 1 1-3 pp., Engineering-Contracting, March 2. 10 cts.

Widening Bridge at Washington, D. C. Illustrated, 3 pp., Contractor, Feb. 15. 20 cts.

Latticed Columns, Proportioning, by Weight per Foot. By Benton Lattin. Illustrated, 1 p., Engineering News, Feb. 24. 15 cts.

Bridge Framing.. Wood versus steel. Some surprising achievements in heavy timber framing. By J. B. Kidner. Illustrated, 1½ pp., Contract Record, Jan. 26. 10 cts.

Steel Centers for 150-foot Concrete Arch Spans, a Novel Method of Striking. Illustrated, 1 1-3 pp., Engineering-Contracting, Feb. 9. 10 cts.

Abutment for Highway Bridges, Pier Type of. Illustrated, 1 p., Engineering Record, Feb. 5. 10 cts.

MISCELLANEOUS

Town Planning. By C. O. Burge. 1 p., Engineering Record, Feb. 19. 10 cts.

Cities and City Planning. Problems that confront Seattle. By J. E. Blackwell. 2 pp., Pacific Builder and Engineer, Feb. 5. 10 cts.

Letchworth Town Planning and the Budget. By F. E. Fremantle. 6 pp., Journal Royal Institute of Public Health, February. 60 cts.

Practical Town Planning. By J. A. Brodie. 1 1-3 pp., Municipal Journal, Feb. 18. 15 cts.

Harbor Problem, Report on the Chicago. 1 p., Engineering News, March 3. 15 cts.

Creation and Development of a Successful Port. History of works constructed and proposed at Port Elizabeth, South Africa. 2-3 p., Contract Journal, Jan. 25. 20 cts.

Municipal Progress in Adelaide, Recent. Illustrated, 1 p., Municipal Journal, Jan. 21. 15 cts.

The Municipality of Marseilles. By P. W. Harrison. Illustrated, 3 pp., Surveyor, Jan. 28. 20 cts.

Annual Report of the President, Borough of Brooklyn, for the year 1908. 94 pp., City Record, Dec. 31. 25 cts.

Great Paris Scheme. Outline for plans for municipal improvement. 1 1-3 pp., Municipal Journal, Feb. 4. 15 cts.

Municipal Review for 1908 and '09. By C. R. Woodruff. 32 pp., American Journal of Sociology. January. 50 cts.

Pawn Shop of Amsterdam, Municipal. By Consul H. H. Morgan. 2½ pp., Daily Consular Report, Feb. 21. 10 cts.

Recovery Schools, Open Air. Remarkable results obtained in Sheffield. By R. P. Williams. Illustrated, 2 pp., Municipal Journal, Feb. 4. 15 cts.

Public Comfort Station, Seattle. Attractive appearance of shelter and entrance. Construction details. Illustrated, 2½ pp., Municipal Journal and Engineer, Feb. 23. 10 cts.

Baths, Manchester. Over one million dollars spent in bathing establishments. The new Withington bath. Illustrated, 1 p., Municipal Journal, Feb. 18. 15 cts.

Milwaukee Public Natatorium. Detailed description of building and bath and the rules of operation. By F. S. Sly Illustrated, 2½ pp., Municipal Journal and Engineer, Feb. 16. 10 cts.

Reference Bureau of Wisconsin, Municipal. By F. H. MacGregor. 4 pp., American City, February. 10 cts.

Municipal Reference Bureau. Recently established in Grand Rapids by the Board of Trade. 1-3 p., Municipal Journal and Engineer, Feb. 16. 10 cts.

The Referencing of Engineering Literature. By A. L. Manzin. 1 p., Engineering Record, Jan. 29. 10 cts.

Construction Camps in Great Britain. 1 1-3 pp., Engineering Record, Feb. 19. 10 cts.

Improving of Living Conditions in Construction Camps. 2-3 p., Engineering News, Feb. 3. 15 cts.

Park Furniture, Concrete. By O. H. Sample. Illustrated, 3 pp., Cement, January. 25 cts.

Retaining Wall, Combined Concrete Fence and. Illustrated, 2-3 p., Engineering Record, Feb. 26. 10 cts.

Chimney, Reinforced Concrete Construction. Paper before Concrete Institute. By E. R. Mathews. 2 pp., Surveyor, Jan. 21 20 cts.

Putting a Reinforced Concrete Jacket on a Cracked Chimney. Illustrated, 2-3 p., Engineering-Contracting, Feb. 16. 10 cts.

Municipal Work Done by Day Labor and b Contract, Relative Cost. Paper before American Association for Advancement of Science. By H. T. Eddy. Illustrated, 5 pp., Municipal Engineering, February. 25 cts.

Contract Work Saves Money for Cities. **Paper before** American Association for the Advancement of Science. By H. P. Eddy. Illustrated, 4 pp., Contractor, Feb. 1. 20 cts.

Percentage Bidding on Public Works. ½ p., Engineering-Contracting, Feb. 9. 10 cts.

Cost Analysis and the Items Involved. Paper before American Society of Engineering Contractors. By D. V. Moore. 2 pp., Contractor, Feb. 15. 20 cts. 3 pp., Engineering-Contracting, Feb. 23. 10 cts.

Computing. By R. T. Crawford. 7 pp. California Journal of Technology, January. 15 cts.

Municipal Engineering in 1909. 22 pp., Surveyor, Jan. 28. 20 cts.

Record of 25 Years' Experience in a Rural District. Paper before Institution of Municipal Engineers. By Wm. Whitehouse. Illustrated, 1½ pp., Contract Journal, Feb. 19. 20 cts.

Track Elevation at Evanston, Ill. By E. O. Greifenhagen. Illustrated, 6 pp., Engineering News, Feb. 10. 15 cts.

Use of Reinforced Concrete in Subways Recently Constructed on track elevation work in Chicago, Ill. Illustrated, 3 pp., Engineering-Contracting, Feb. 23. 10 cts.

Piles, Methods of Constructing and Driving Combination Concrete and Timber, with some results of tests. Illustrated, 2-3 p., Engineering-Contracting, Feb. 9. 10 cts.

Hydraulic Filling at Cairo, Ill., Methods and Cost of. By J. M. Allen. Illustrated, 2 pp., Engineering-Contracting, Feb. 16. 10 cts.

Canal Improvement as Affecting Municipalities. By H. C. H. Shenton. 1 p., Surveyor, Jan. 28. 20 cts.

Paris Flood, Fighting the . By W. H. Miller. Illustrated. 2 pp., Engineering Record, Feb. 26. 10 cts.

Water Supply, Sewerage and Subways of Paris in Relation to the Present Floods. By G. A. Soper, Illustrated, 5 p., Engineering News, Feb. 3. 15 cts.

Adverse Possession and its Significance to the Surveyor Doctrine. By G. L. Teeple and L. S. Smith. 1 p., Engineering-Contracting, Feb. 9. 10 cts.

BOOK REVIEWS

Police Administration.—A Critical Study of Police Organizations in the United States and Abroad. By Leonhard Felix Fuld. G. P. Putnam's Sons, New York and London, 1909. Illustrated, 551 pp., Cloth, 6 x 9 inches. Price $3, net.

The author is an examiner for the Municipal Civil Service Commission of New York City and a lawyer by training. His knowledge of police matters was acquired by close observation of the workings of the New York police extended over a number of years as well as by study. The deduction from his observations is that if the police are no better than they should be the fault is largely with the general body of citizens who put the police in impossible positions by expecting them to enforce laws that they do not want enforced, or, to state the case more definitely, the local police are expected to enforce State laws that are not approved by the inhabitants of cities. The author believes that a State Commission of Police with proper authority could greatly improve conditions. His department should be divided into three bureaus,—a bureau of rural constabulary, a bureau of criminal investigation and a city police bureau. The rural constabulary should consist of a local police force consisting of mounted and unmounted officers who should patrol the rural highways and assist the local rural police in arresting law breakers. The bureau of criminal investigations should maintain an identification bureau and a corps of detectives who should ferret out criminals in the rural districts where the police are not so numerous or so skilled as in cities and should also aid the city police in difficult cases and in emergencies. The city police bureau should be charged with enforcing the State laws which are obnoxious to the inhabitants of cities and thus remedy the principal source of trouble in all municipal police departments.

After two introductory sections giving a historical sketch of the origin and growth of modern police systems the author goes into the details of present systems. His division of the subjects is clearly indicated in the chapter titles: Officers of Department; Selection of Patrolmen; Duties of Policemen; Special Duties; Discipline; Equipment and Records; Control of Leisure; Police Problems; Examinations in New York. The book should prove interesting to the general reader desiring to acquire a general knowledge of police matters, useful as a text-book to students of political and civic affairs and of practical value to members of police departments who desire to have a well-grounded knowledge regarding their chosen profession.

Proceedings of National Municipal League. Cincinnati Conference on Good City Government, 1909. 489 pp. Cloth, 6 x 9 inches.

We have just received a copy of the Proceedings covering the Fifteenth Annual Meeting of the National Municipal League. Like previous volumes, this contains a very considerable amount of matter which is of great value to all who are interested in municipal government. Among the authors of papers are such well-known men as Chas. J. Bonaparte, Clinton Rogers Woodruff, Prof. A. R. Hatton, Dr. L. G. Powers, Dr. Milo R. Maltbie, and many others. The papers published include discussions of the "Initiative in the Choice of Elective Municipal Offices," immigration in several phases, the police problem, "Taking Municipal Contracts Out of Politics," building codes, commission government, municipal budgets and expenditures, the initiative, referendum and recall, "Instruction in Civics," rapid transit, municipal health, and "Publicity and Regulation of Campaign Contributions."

While considerable of this matter is in the nature of theoretical discussion, a great deal takes the form of relations of actual experiences in various cities of the country; and it may be said that few of the papers are in the nature of complaints against any one or any thing, but there is throughout the whole a general spirit of optimism. This does not mean there is no criticism of present conditions or officials; but this criticism is in most cases such as might well lead to reform in practices, and might be termed constructive rather than merely carping or caviling criticism.

One impressive idea was that enlarged upon most forcibly by Richard Henry Dana of Boston, in favor of permanency in municipal positions other than a few elective ones, thus encouraging talented men to make a profession of municipal engineering, municipal finance and other branches of municipal administration. In reply to the argument often advanced that a new Mayor, in order to carry out new policies, must surround himself with new men who favor those policies, he cites the fact that both Mr. Harriman and Mr. Hill, in reorganizing large railway systems, made few, if any, changes in any of the positions except that of the general managers of the chief departments of the road. Mr. Harriman even reversed the policies of former presidents without any change in the personnel except in a few of the higher offices.

Altogether the Proceedings contains 470 pages of very interesting and instructive discussions by a considerable number of experts.

Solid Bitumens, their Physical and Chemical Properties and Chemical Analysis, together with a treatise on the Chemical Technology of Bituminous Pavements. By S. F. Peckham. Myron C. Clark Publishing Co., New York, 1909. Cloth, 6 x 9 inches, 324 pp. Price, $5, net.

The author is Chemist to the Department of Finance, City of New York. He began experimenting on bitumens in 1859 and has continued the work almost continually ever since. The book is largely the record of personal experience. Like all asphalt works the book begins with practice at the tower of Babel, but soon gets clearer. The introductory chapters treat of the geographical distribution, theories of origin and the classification of bituminous substances. Some space is given to the discussion of the derivation of natural solid bitumens, bituminous rocks and artificial solid bitumens. The bulk of the work, eight chapters, are devoted to chemical considerations and analyses. Many different methods of analysis, as practiced by different chemists for ultimate and proximate and technical analysis, are given, until the subject to anyone but a specialist would appear to be exhausted. Physical properties, perhaps the most important from a trade standpoint, are given; a chapter of over a hundred pages, which describes various tests for softening point, penetration and ductility. Seven brief chapters discuss the chemical technology of different kinds of pavements in which bitumen is an important constituent. While accurate methods of testing for bitumen are given in detail, the reader will look in vain as he will in all other similar books for a method by which he may determine the percentage of bitumen in a sample of pavement, by some method by which results may be ascertained quickly enough to be of practical value in supervising work. Yet quick tests, reasonably accurate, are made in many technical laboratories. Where specifications for asphalt street pavements allow a variation of from 9 to 12 per cent of bitumen, it seems as if some useful information could be derived from a test liable to an error of even two or three tenths of a per cent. if the result could be obtained quickly enough so that the chemist could exercise some control over the mixture.

The Water Supply, Sewerage and Plumbing of Modern City Buildings.—By William Paul Gerhard. New York, John Wiley & Sons, 1910. Cloth, 9x6 inches, 491 pp. Price $4.

This book is stated by the author to be the outgrowth of various lectures prepared for engineering societies and of essays written for technical journals. These articles and lectures have been revised and enlarged, new illustrations and many diagrams and tables added, and the entire subject brought up to date. The book deals with the subject from a practical standpoint, the preface states, being written by a practicing engineer who has devoted many years to the special topics under consideration. The chapters, while correlated, are, the author states, purposely written so that each one is complete in itself and may be used without reference to the others. The contents are: Essential Features of the Hydraulic and Sanitary Engineering of Buildings; Sanitary Fixtures and Appliances; Advanced and Simplified Plumbing; Plumbing In Its Relation to Disease and Municipal Control of Plumbing; Domestic Water Supply; The Water Supply of Large Modern City Buildings; The Maintenance of Pipe Systems for Sewage, Gas and Water; Rules on Plumbing, Water Supply and Sewerage, Chiefly for Hospital Buildings and Other Public Institutions; Appendix A, Definitions; Appendix B, Historical Sketch of the Development of the Art of the Drainage and Plumbing of Habitations; Appendix C, Specification Reminder; Appendix D, Explanation of Gerhard's Sewer Diagram; Appendix E, Conversion Diagrams; Alphabetical Index.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Street Railways—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we can not guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			STREET IMPROVEMENTS	
Connecticut	New Haven	Mar. 11, 2 p.m.	Furnishing road oil emulsion for street sprinkling	C. W. Kelly, City Engineer.
New York	Amsterdam	Mar. 11	Furnishing 300,000 fire clay paving blocks	F. E. Crane, City Engineer.
Minnesota	Minneapolis	Mar. 11	Furn. bituminous macadam mixer, engine and roller	Andrew Rinker, City Engineer.
Indiana	Brazil	Mar. 11, 11:30 a.m.	Bldg. gravel road 8,308 ft. long	James L. Burns, Co. Auditor.
Indiana	Lafayette	Mar. 12, 10 a.m.	Bldg. F. M. Buskirk et al. free gravel road	John P. Foresman, County Auditor.
Ohio	Orrville	Mar. 12, noon	Improving Mohican ave., W. Market to Terminal st.	F. E. Wolfe, Village Clerk.
Indiana	Laporte	Mar. 12, 10 a.m.	Bldg. 2 macadam roads, 5,280 and 4,917 ft. long	Charles H. Miller, County Auditor.
Ohio	Youngstown	Mar. 14	Brick paving 4,650 sq. yds. Glenwood ave., from city limits	F. Agnew, Sec'y Co. Comrs., Road District No. 1.
Indiana	Hammond	Mar. 14	Paving, curbing and otherwise improving Elizabeth st	Otto H. Duelke, City Clerk.
Wisconsin	Menasha	Mar. 14	Grading, curbing and paving	D. McMahon, Chm. St. Com.
Pennsylvania	Oil City	Mar. 14, 7:30 p.m.	Paving 29,000 sq. yds.; curbing, 16,000 lin. ft.; fill 8,800 cu. yds.; excavation, 14,600 cu. yds.; various streets	C. W. Mullalley, City Controller.
Kansas	Caney	Mar. 14	Brick paving, 13,950 sq. yds. grading, curbing, 4 sts., 2 alleys	R. V. Dolson, City Clerk.
Alabama	Gordon	Mar. 15	Constructing 51 miles of gravel road in Houston County	W. J. Parish, County Com'r.
Wisconsin	Burlington	Mar. 15, 2 p.m.	Brick paving, 10,321 sq. yds. on 6-in. concrete base; 2,500 lin. ft. cement curb; 2,600 cu. yds. excavation	P. J. Hurtgen, City Engineer.
Ohio	Sylvania	Mar. 15, noon	Vit. brick or block paving, etc., Ohio ave. and Division street	W. B. Harris, Village Clerk.
Oklahoma	Clinton	Mar. 15, 8 p.m.	Vit. block paving, 24,505 sq. yds. on 5-in. concrete base and asphalt filler; excav. 5,880 cu. yds. earth; concrete curb, 2,480 lin. ft.; conc. gutter, 15,230 sq. ft. J. L. O'Hearn, Cons. Engr.	C. C. Smith, City Clerk.
Indiana	Danville	Mar. 15	Constructing 4 gravel roads in Center township	W. H. Nichols, County Auditor.
New Jersey	Elizabeth	Mar. 15	Brick paving 6,340 sq. yds. on 6-in. concrete, Florida st.	N. K. Thompson, Street Com'r.
Connecticut	Greenwich	Mar. 15, 8 p.m.	Widening and paving portion Greenwich ave.; also moving bldgs. back	B. E. Kelley, Boro. Clerk.
Iowa	Ames	Mar. 15	24,000 sq. yds. creo. wood block paving, 3 inches deep, treated with 16 lbs. creo. oil per cu. ft. laid on 1-in. sand cushion, 4-in. concrete base	J. Q. Wickham, City Engineer.
Washington	Olympia	Mar. 16, 2 p.m.	Improving State aid roads	H. L. Bowlby, State Hwy. Com'r.
Indiana	Ft. Wayne	Mar. 16, 2 p.m.	Grade crossing work, 3 streets; city's portion, $8,000	Frank Randall, City Engineer.
New York	Corning	Mar. 17, 11 a.m.	Bldg. 12,000 sq. yds. brick pavement with cement curb, and 8,520 sq. yds. bit. macadam, with cement curb and gutter	W. C. Sleight, Clk. Bd. Pub. Wks.
Ohio	Cincinnati	Mar. 18, noon	Improving Madison road, Cooper to Cornell ave., Sycamore twp.	Stanley Struble, Pres. Co. Comrs.
Utah	Salt Lake City	Mar. 18	Grading, curbing, paving Third, Sixth and Rio Grande streets	H. G. McMillan, Chm. Bd. Pub. Wks.
Michigan	Mt. Clemens	Mar. 21	Paving portions of S. Front and Market streets	Paul Matthews, City Clerk.
Alabama	Montgomery	Mar. 21, noon	Regraveling 12 miles; grading and graveling 2 miles of road	J. T. Bullen, County Engineer.
Ohio	Canton	Mar. 22	Curbing, 12,300 lin. ft.; flagstone walks, 61,420 sq. ft.	P. H. Weber, City Engineer.
Indiana	Michigan City	Mar. 22, 10 a.m.	Brick paving Hermitage avenue	W. M. Miles, City Engineer.
New Jersey	Paterson	Mar. 23, 2 p.m.	Grading and laying G. F. B. Comp. pavement, drain, etc., Main street	Wm. H. Mason, Chm. Bd. Com.
Washington	Olympia	Mar. 23, 2 p.m.	Improving 4 State aid roads	H. L. Bowlby, Chm. State Hwy. Com.
Maryland	Baltimore	Mar. 24, noon	Bldg. State roads aggregating 50.56 miles, various Counties	John M. Tucker, Chm. St. Rd. Com.
Ohio	Cincinnati	Mar. 25, noon	Improving Second ave., 1,250 ft. in Green twp.; Spec. No. 11	Fred Dreihs, County Clerk.
Ohio	Columbus	Mar. 30	Grading and macadamizing 3,705 lin. ft. Lazell road on County line: 1,850 tons crushed limestone, 420 tons screenings, 10,000 gals. asphaltic oil, etc.	John Scott, Clk. County Comrs.
North Carolina	Raleigh	Mar. 30	Paving 25,000 sq. yds. with brick, cement filler, bitulithic and asphalt macadam on Fayette and other streets	Wm. W. Willson, City Clerk.
Minnesota	St. Paul	April 12, 10 a.m.	Grading and macadamizing Centerville road; cost, $20,000; Lexington ave., $11,000; Bald Eagle Lake ave., $5,000	E. G. Krahmer, County Auditor.
			SEWERAGE	
California	Lodi	Mar. 14	Constructing sewer system. H. H. Henderson, Stockton, Engr.	J. M. McMahon, City Clerk.
Oklahoma	Oklahoma City	Mar. 14	Bldg. lateral sewers in West View Hts. and Section 29	Bob Parman, City Clerk.
Oklahoma	Clinton	Mar. 15, 8 p.m.	Bldg. 1,200 ft. 18-in., 4,970 ft. 15-in., 1,520 ft. 12-in., 10,900 ft. 10-in., 7,000 ft. 8-in. sewers of first quality pipe, manholes, etc.	G. G. Welch, Mayor.
Wisconsin	Burlington	Mar. 15, 2 p.m.	Bldg. (*a*) sanitary sewers; (*b*) storm sewers; (*a*) 1,861 ft. 10-in.; 1,073 ft. 8-in.; 560 ft. 6-in. vit. pipe, 8 manholes, 2 lamp holes; (*b*) 716 ft. 12-in., 360 ft. 10-in., 300 ft. 8-in. vit. pipe sewer, 5 manholes, 12 street inlets	P. J. Hurtgen, City Engineer.
Florida	Madison	Mar. 16, 8 p.m.	Bldg. sanitary sewer system: 6 miles 6 to 15-in. pipe sewer and disposal plant complete. H. S. Jaudon, C.E., Savannah, Ga.	R. H. Rowe, Mayor.
New Jersey	Crawford	Mar. 16, 8 p.m.	Bldg. sewers, etc., in 3 sts. and 3 aves. J. L. Bauer, Twp. Engr.	Township Committee.
New York	Monticello	Mar. 17, 8:30 p.m.	Bldg. portion of sewer system and disposal plant	Dr. R. W. Allan, Sec'y Sewer Comrs.
Virginia	Williamsburg	Mar. 23, noon	Franchise for sewerage and water, electric light and power systems for city	John L. Mercer, Chm. Wtr. Com.
Tennessee	Cleveland	April 1	Bldg. $35,000 sewer system and disposal plant for city	Sol.-Norcross Co., Atlanta, Ga., Engr
New York	Syracuse	April 1	Harbor Brook improvement, 3 miles long, including construction of intercepting sewer	Intercepting Sewer Board.
North Dakota	Ashley	April 4, 2 p.m.	Furnishing 12 metal culverts of various sizes	John F. George, County Auditor.
			WATER SUPPLY	
South Dakota	Aberdeen	Mar. 14	Furn. 2 cars 6-in. No. 38 and 1 car 4-in. No. 24 c. i. pipe, 12 Eddy or Ludlow hydrants, 4-in. con., two 2 1-2-in. nozzles, twelve 6-in. and six 4-in. Eddy gate valves, 300 3-4 and 100 1-in. Mueller stop and same number inverted curb cocks, 10,000 lbs. extra strong 1-in. lead pipe, 4 lbs. 12 oz. per ft., 40,000 lbs. 3-4-in. lead pipe. 3 1-2 lbs. per ft., etc.	F. W. Raymond, City Auditor.
Virginia	Richmond	Mar. 14	Furn., complete, gasoline engine and centrifugal pump, moulded on truck, for pumping water out of trenches, 150 gals. per min., with 16-ft. suction hose and foot valve	E. E. Davis, Supt. Water Works.
Saskatchewan	Saskatoon	Mar. 14, 7:30 p.m.	Furn. c. i. pipe, specials, hydrants, gate valves and boxes	J. H. Truesdale, City Clerk.
Oklahoma	Ft. Reno	Mar. 14, 1 p.m.	Bldg. steel tank and tower, 11 concrete cisterns, boring 12 wells.	Capt. L. Hardeman, Depot Q. M.
Arizona	Phoenix	Mar. 14, 4 p.m.	Furnishing 5,000,000-gal. pumping engine	Robt. A. Craig, Supt. Water Works
Wisconsin	Burlington	Mar. 15, 2 p.m.	Furn. and lay. 1,334 ft. 4-in. water pipe, four 4-in. gates and valve boxes, one 6-in. gate, etc., one hydrant, 2 reset	P. J. Hurtgen, City Engineer.
Indiana	Ft. Wayne	Mar. 15, 3 p.m.	Furnishing 3,000 to 9,000 water meters; 3 different kinds to be purchased at cost of $50,000; mostly 5-8-in. size	Board of Public Works.
New Jersey	Atlantic City	Mar. 15, 2:30 p.m.	Furn. and install two 300 h.p. hori. water-tube boilers at Absecon	L. Van Gilder, Supt. Water Works.
Oklahoma	Henryetta	Mar. 15	Bldg. 35-ft. earth and concrete dam; also 22x50-ft. steel stand pipe, 500-gal. power pump and gasoline engine	W. E. Harlan, Resident Engineer.
New Jersey	Perth Amboy	Mar. 16	Bldg. 40x60-ft. pump house; also foundation of concrete 5 ft. lower than surface of pond on 135 piles; also sinking 4 wells under house, and machinery to regulate pressure	S. J. Mason, Engr. Water Board.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			WATER SUPPLY—Continued	
Kansas	Columbus	Mar. 21, noon	Furn. all materials for w. w.: 3,200 ft. 6-in., 7,400 ft. 4-in., two 6-in. and four 4-in. valves, etc.; 16 hydrants, specials, etc.	F. H. Hawkins, City Clerk.
South Dakota	Faulkton	Mar. 21	Furn. material and bldg. 60,000-gal. steel tank on steel tower.	J. T. Mitchell, City Auditor.
Sackatchewan	Saskatoon	Mar. 21, 7:30 p.m.	Furnishing material and erecting steel stand pipe.	J. H. Truesdale, City Clerk.
Virginia	Williamsburg	Mar. 23, noon	Franchise for water works, lighting and power and sewerage systems for city.	John L. Mercer, Chm. Wtr. Com.
Minnesota	Minneapolis	Mar. 25	Furnishing 2,000 5-8-in. corporation cocks, complete.	Henry N. Knott, City Clerk.
Pennsylvania	Lebanon	Mar. 25, 8 p.m.	29,100 ft. 20-in. gravity main and 3,700 ft. 16-in., 13,900 ft. 32-in., 3,900 ft. 10-in. main, in strts. T. R. Crowell, City Eng'r.	J. D. Kerr, Sec'y Wtr. & Lt. Comrs
Pennsylvania	Lebanon	Mar. 30	Laying new pipe line from supply dams at South Mountain to city; $140,000 bonds voted. E. H. Schroff, Supt.	Geo. W. Lingle, Pres. Water Board
			BRIDGES	
Washington	Snohomish	Mar. 14, 10 a.m.	Bldg. steel swing bridge over river: 280-ft. steel span, 20-ft. roadway; two 6-ft. walks on conc. center pier and conc. abutments	John F. Birney, Co. Engr., Everett
Georgia	Savannah	Mar. 14, noon	Bldg. steel highway bridge, inc. foundations over Herb river	G. Reuben Butler, County Clerk.
Ohio	Norwalk	Mar. 14, 10 a.m.	Furn. and erect steel riveted truss bridge, 100-ft. span, 16-ft. roadway, over Vermillion river, near Clarksfield.	Jay E. Smith, County Auditor.
Missouri	St. Louis	Mar. 15, noon	Rebldg. super. and bldg. new sub., north portion 18th st. bridge.	M. Reber, Pres. Bd. Pub. Impts.
Nebraska	Columbus	Mar. 15	Bldg. all bridges ordered for one year from April 1	John Graf, County Clerk.
New York	Niagara Falls	Mar. 15	Erecting old 4th st. bridge over Gill Creek at E. Falls st.	Thos. H. Hogen, City Clerk.
Michigan	St. Joseph	Mar. 16, noon	Bldg. substructure for swing bridge over Morr. Chan. and railroad on Wayne st.; also timber protection for draw and temporary bridge at forest.	M. Weber, City Clerk.
Arizona	Phoenix	Mar. 16, 11 a.m.	Bldg. rein. concrete bridge over Salt river; $98,000 available.	Wm. E. Thomas, Clk. Bd. Superv.
Colorado	Georgetown	Mar. 19	Bldg. concrete steel hwy. bridge over south fork of Clear creek.	C. W. Comstock, State Engr., Denver
Louisiana	Shreveport	Mar. 22, 5 p.m.	Bldg. $300,000 steel traffic bridge over Red river.	Geo. R. Wilson, City Engineer.
North Dakota	Grand Forks	Mar. 22, 10 a.m.	Bldg. all steel bridges in 1910; by lin. ft. for truss and plain	Hans Anderson, County Auditor.
Oklahoma	Muskogee	Mar. 28, 10 a.m.	Bldg. 3 steel bridges: 160, 120 and 90 ft.; also 36-ft. conc. arch.	J. J. Brotherton, Chm. Co. Comrs.
Illinois	Streator	April 4, 5 p.m.	Bldg. $30,000 bridge over river; grade and pave approaches.	John B. Patterson, City Clerk.
Indiana	La Porte	April 4	Bldg. bridge over Kankakee river at English Lake.	H. C. Miller, County Auditor.
California	San Jose	April 5	Bldg. $15,000 reinforced concrete bridge over Coyote creek.	J. G. McMillan, County Surveyor.
Washington	Kalama	April 5	Bldg. 300 ft. steel hwy. bridge at Castlerock, one span with wood flooring, 16-ft. roadway; concrete sub., 2 piers, 70 ft. high, 55 ft. being above water.	G. S. Roberts, County Engineer.
			LIGHTING AND POWER	
California	Sierra Madre	Mar. 12	Gas franchise for bldg. and operating for 50 years a system of underground conduits, mains and gas pipes.	J. A. Madden, Clk. Bd. Trus.
Wisconsin	Green Bay	Mar. 15	Furn. and install. electric fixtures in new Court House.	Paul Schuering, County Supervisor.
Dist. of Col'bia	Washington	Mar. 15, 2 p.m.	Furn. 12x12-in. triplex single-acting power plunger pump and 20 h.p. Springfield gas engine.	C. H. Rudolph, Pres. Bd. Comrs.
Ohio	Barnesville	Mar. 17	Lighting sts., public buildings, etc. with electricity for 10 years.	F. Waldo Hilles, City Clerk.
Illinois	Galesburg	Mar. 21, noon	Corliss valve steam engine; also Tandem Compound Auto. engine; a.c. generator and exciter; comb. unit of steam turbine a.c. generator and exciter; switchboard.	B. J. Huff, Jr., City Clerk.
Virginia	Williamsburg	Mar. 23, noon	Franchise for lighting and power systems; also for sewerage and water works for city.	John L. Mercer, Chm. Water Com.
California	Los Angeles	Mar. 28, 2 p.m.	Franchise to construct and operate for 30 years electric light pole and wire system on certain highways of County.	Board of County Supervisors.
California	Hayward	April 6	Purchase of electric light and power franchise.	Board of City Trustees.
			MISCELLANEOUS	
New York	New York	Mar. 12, 10:30 a.m.	Furnishing 8 platform wagon scales in various borroughs.	Rhinelander Waldo, Fire Com'r.
Kansas	Salina	Mar. 12	Bldg. Court House; Wilmarth & Zerke, Archts., Watson bldg.	Smith George, Chm. Co. Comrs.
Massachusetts	Boston	Mar. 17	Erecting 1,700 ft. galv. iron fence at Chas. River Dam Lock.	Charles River Basin Com.
North Carolina	Wentworth	Mar. 14	Plans, etc., for $12,000 County jail.	J. T. Holland, Clk. County Comrs.
Dist. of Col'bia	Washington	Mar. 14, 10:30 a.m.	Furnishing hose, packing, gaskets and rubber belting.	Gen. Purch. Agt., Isth. Canal Comm.
Connecticut	New Haven	Mar. 14, 2 p.m.	Bldg. city supply house, stables, sheds, etc.	C. W. Kelly, City Engineer.
Dist. of Col'bia	Washington	Mar. 15, 2 p.m.	Furn. comb. chemical engine and hose wagon.	C. H. Rudolph, Chm. Bd. Comrs.
Minnesota	Faribault	Mar. 15	Erecting a jail. Albert Scheffel, Arch., Mankato.	Board of County Commissioners.
Wisconsin	Green Bay	Mar. 15, noon	Furnishing and decorating new County Court House.	Elmer S. Hall, County Clerk.
Virginia	Norfolk	Mar. 15, noon	Bldg. bulkhead or retaining wall on both sides of "The Hague".	W. T. Brooke, City Engineer.
Illinois	Salem	Mar. 15	Erecting Court House. J. W. Royer, Arch., Urbana	H. K. Stevenson, Sec'y Bldg. Comm.
Florida	Tampa	Mar. 15	Supplying uniforms for entire force of Fire Dept.	A. J. Harris, Chief Fire Dept.
Maryland	Baltimore	Mar. 16, 11 a.m.	Furn. iron and steel needed by Dept. of St. Cleaning for year.	J. L. Wickes, Comr. St. Cleaning.
Indiana	Fort Wayne	Mar. 16, 2 p.m.	Track elevation work, city's portion 3 streets; cost, $4,000.	H. W. Becker, Clk. Bd. Pub. Wks.
New Jersey	Rockaway	Mar. 17	Bldg. fire house; separate bids or as whole. J. V. King., Arch.	John H. Miller, Boro. Clerk.
Virginia	Roanoke	Mar. 18	Bldg. two, also one-story addition to Revenue Com'r's office.	W. L. Craft, City Clerk.
California	Oakland	Mar. 19	Franchise for electric street railway in Berkeley.	Board of County Supervisors.
Missouri	Springfield	Mar. 21	Erecting $250,000 Court House for County.	Board of County Commissioners.
Montana	Great Falls	Mar. 21, 8 p.m.	Furn. one double 50-gal. tank, 60 h.p. auto-propelled chemical fire engine, etc., f. o. b. Great Falls.	W. P. Wren, City Clerk.
Texas	Gainesville	Mar. 22	Complete maps of city and city cemetery.	John W. Puckett, Mayor.
Dist. of Col'bia	Washington	Mar. 23, 2 p.m.	Collection and disposal of ashes, garbage, dead animals, night soil, etc.; also taking ashes, etc., from city bldgs. for 1, 3 or 5 years.	Cuno H. Rudolph, Pres. Bd. Comrs.
Illinois	Chicago	Mar. 23	Bldg. 4,000 ft. of concrete or stone break water	M. H. West, Sec'y Linc. Park Comrs.
Illinois	Ft. Sheridan	Mar. 30, noon	Constructing garbage crematory and building.	Capt. M. E. Saville, Const. Q. M.
Montana	Butte	Mar. 30, 2 p.m.	Bldg. $500,000 Co. Court House; sep. bids for heating, plumbing, ventilating and elec. elevators. Link & Haire, Archts.	J. H. Cronin, Chm. Bd. Co. Comrs.
North Dakota	Ashley	April 4	Furnishing 12 metal culverts of various sizes.	John F. George, County Auditor.

STREET IMPROVEMENTS

Attalla, Ala.—Council has decided to lay sidewalks in principal sections of city.

Selma, Ala.—Dallas County Commissioners have ordered construction of one-half mile of public road.—W. S. Keller, Superintendent of Public Roads.

Alturas, Cal.—Good Government Club has asked for additional walks.

Hermosa Beach, Cal.—Construction of speedway boulevard through the Bay district is being urged.

Los Angeles, Cal.—Proposal to make Vermont ave. a 125-ft. boulevard from Griffith Park to San Pedro is being considered by North, Northeast and Northwest Improvement Association.

San Francisco, Cal.—Residents on Laguna st. have asked for bituminizing of that thoroughfare; opening of Lake st. is being urged.

Santa Ana, Cal.—Street Committee. Street Superintendent Ward, Chairman, has recommended improvement of 16 streets with "rock and oil macadam" and portions of 5 streets with "gravel and oil."

Pueblo, Col.—Council has passed ordinance for extension of Grand ave.

East Hartford, Conn.—Improvement of sidewalks in Center School District is being urged.

New Castle, Del.—Town will consider election on $30,000 bonds for street improvements.

Brunswick, Ga.—Council will advertise for bids for paving Newcastle st.

Macon, Ga.—Mayor John T. Moore will take up matter of paving ten streets in proposed annexed districts.

Bloomington, Ill.—Board of Local Improvements has approved $32,000 estimate for paving W. Washington st. with block brick pavement, set on 6-in. concrete base, with concrete curb and gutter.—Elmer Folsom, City Engineer.

Elgin, Ill.—South State st. will be paved with brick during coming summer.

Steger, Ill.—Bids will be received about Apr. 1 for 8 miles of sidewalks.—J. R. Wachs, City Clerk.

Elwood, Ind.—Improvement of roads is being considered by County Commissioners.

Evansville, Ind.—Board of Works has ordered improvement of seven streets; also extension of Madison ave.

Goshen, Ind.—Council will receive bids for paving 3d st. and Lincoln ave. with either asphalt, macadam, vit. brick or creosoted blocks.—Charles Witt, City Engineer.

Indianapolis, Ind.—Board of Works has passed resolution for improvement of Twelfth st.

New Albany, Ind.—Board of Public Works is considering permanent improvement of number of streets.

Cedar Rapids, Ia.—Council has decided to improve three streets.—L. J. Storey, City Clerk.

Colfax, Ia.—City will improve mile of road leading into city from north; also pave business portion with brick.

Washington, Ia.—Council has been asked to pave East Washington st.

Independence, Kan.—West Blue ave., principal street leading from this city to Kansas City, will be paved.

Kansas City, Kan.—Bids will be received by Board of Park Commissioners in April for construction of driveways, sidewalks, gutters, coping and steps in number of boulevards; work will include 995 sq. ft. concrete gutters, 12,970 sq. ft. granitoid sidewalks, 328 lin. ft. granitoid steps, 130 lin. ft. cement coping, 730 sq. yds. macadam paving, with water service.—A. H. Helder, Secretary; L. H. Ellis, Engineer.

Lawrence, Kan.—Paving of Alabama and Pennsylvania sts. has been ordered.—F. D. Brooks, City Clerk.

Salina, Kan.—City will pave North and Pine sts. with macadam.

Annapolis, Md.—City will ask Legislature for permission to issue $24,000 street and other improvement bonds.

Cambridge, Md.—Dorchester County Commissioners have petitioned Legislature for authority to issue $50,000 bonds for grading, draining, bridging and otherwise improving public roads.

Elkton, Md.—Petitions are being circulated requesting State Good Roads Commission to build road between Elkton and Chesapeake City this year.

Havre de Grace, Md.—Town is considering $25,000 bond issue to improve streets.

Hyattsville, Md.—City has decided upon permanent improvement of streets.

Fall River, Mass.—Meridian residents are urging macadamizing of that thoroughfare.

Haverhill, Mass.—City will sell $156,000 bonds for permanent work on streets, sewers and sidewalks, and other improvements.

Lawrence, Mass.—Engineer Thompson, of the Boston & Maine, has submitted incomplete plan for eliminating grade crossings in this city.

Detroit, Mich.—Council of River Rouge has decided to open South Dearborn rd.

Minneapolis, Minn.—Special committee has recommended $95,500 appropriation for building good roads within city limits; purchase of concrete mixer, cost $6,000, is included.

Minneapolis, Minn.—County Board will expend $5,000 yearly on early repairs of main roads.

St. Paul, Minn.—Grading of Winona st. is being considered; cost $3,350.

St. Paul, Minn.—South St. Paul Council has accepted proposition of Board of Ramsey County Commissioners relative to macadamizing and improvement of Concord st.; work will be begun early this spring; cost about $10,000.

Natchez, Miss.—City will contract for repairing and maintaining streets and alleys; contractor is to furnish 1,500 yds. of gravel; bids to cover two and three years.

Kansas City, Mo.—Oak st. residents are urging improvement of that thoroughfare.

Liberty, Mo.—Construction of rock road connecting this city with Kansas City is being considered.

Maitland, Mo.—Nodaway County Engineer has estimated cost of repairing Graham rd. at $4,500.

St. Joseph, Mo.—Board of Works has decided to improve Kansas ave., 33d and Angelique sts.—J. E. Gates, City Clerk.

Norfolk, Neb.—Council is considering paving at estimated cost of $38,000.

Omaha, Neb.—Sidewalks will be laid on number of streets in Bellvue.

Atlantic City, N. J.—Mayor Franklin P. Stoy has recommended widening of boardwalk and use of reinforced concrete substructure; resurfacing and paving of Arctic and Baltic aves., and widening and beautification of Ventnor ave.

Belleville, N. J.—Township Committee is considering improvement of number of streets.

Elizabeth, N. J.—Grading and curbing of Grove ave. is being considered.

Harrison, N. J.—Middlesex st. property owners are urging paving of portion of street with bitulithic or asphalt.

Kenilworth, N. J.—Council has decided to make additional improvements to Michigan ave.

North Arlington, N. J.—Council will ask Bergen County Commissioners to improve culverts along River rd.

Trenton, N. J.—Road Committee of Board of Freeholders has decided to go ahead with sixteen miles of new macadam roads proposed for the county.

Amsterdam, N. Y.—City will open bids March 11 for delivery of about 300,000 fireclay paving blocks, f. o. b. city.—F. E. Crane, City Engineer.

Cornwall, N. Y.—Village will vote on $14,000 bonds to lay sidewalks on Hudson st.

Kinderhook, N. Y.—Town Board is considering improvement of highway leading from Valatie to Chatham line.

Medina, N. Y.—Frederick L. Downs, President, and Trustees W. E. Stocking and John Crowley are urging construction of State road through village.

Syracuse, N. Y.—Council has adopted ordinance providing for paving of portion of Oxford st.; cost $8,080.

Akron, O.—Council has decided to improve Snyder, Campbell and Nathan sts.—D. W. Harter, Clerk.

Akron, O.—Stark County Board of Commissioners is having plans prepared for construction of the Cleveland and Merman roads, 17 and 1½ miles, respectively.—J. W. Frank, Chairman.

Akron, O.—City will soon advertise for bids for paving six streets and grading one.—J. W. Gauther, Director of Public Service.

Canton, O.—Bids will soon be received for 20,000 cu. yds. grading at Stark County Infirmary.—F. B. Gilcrist, County Surveyor.

Cincinnati, O.—City has rejected bids for improving Astoria ave. and Rachel st.

Cincinnati, O.—City may expend $500,000 more for street improvements. Councilman Mullen is interested.

Dayton, O.—Plans are being prepared by City Engineer F. J. Cellarius for vit. brick or asphalt paving as follows: Burns ave., 4,450 sq. yds., $10,000; Dutoit st., 4,010 sq. yds., $8,000; Monument ave., 17,400 sq. yds., $33,127; Springfield St., 23,874 sq. yds., $47,550; Ionia st., 13,387 sq. yds., $26,752; Wyoming st., 9,920 sq. yds., $16,916; River st., 7,550 sq. yds., $15,150; Lehman st., 8,500 sq. yds., $16,599; Hickory st., 6,672 sq. yds., $16,053; Linden st., 7,050 sq. yds., $14,289; 1st st., 1,760 sq. yds., $3,766; Newcom st., 1,020 sq. yds., $1,899; Meigs ave., 2,850 sq. yds., $6,010.—John C. Ely, Director of Public Service.

East Youngstown, O.—Village Council is considering paving of number of streets.—Geo. Montgomery, Village Engineer.

Elyria, O.—Plans have been prepared by County Surveyor C. H. Lawrence for construction of LaGrange macadam road, length 2 miles.

Mansfield, O.—City Engineer Hursch has prepared plans and specifications for improving number of streets.

Ravenna, O.—Council has passed ordinances for paving and grading E. Bowery st.

Youngstown, O.—Council has passed ordinances for paving Breaden st. and repaving Broadway.

Durant, Okla.—Bids will be opened Mar. 10 for paving eleven blocks.

Holdenville, Okla.—Plans and profiles are being prepared for paving 18 blocks this summer.

Bandon, Ore.—City will do extensive amount of macadamizing in business section during summer.

Medford, Ore.—Commercial Club will attempt to raise $100,000 needed to construct Crater Lake blvd.; Supreme Court has decided that Act of last Legislature making appropriation for that purpose is unconstitutional.—W. M. Colvig, President.

Beaver Falls, Pa.—Bids will be received at once for laying concrete or vit. brick paving for coming municipal year.

Chester, Pa.—Residents of Chester pike, Prospect Park, are urging improvement of sidewalks on that thoroughfare.

Erie, Pa.—Council has passed third reading ordinances for paving 2d and 3d sts.

Erie, Pa.—Mayor Liebel has signed ordinance for employment of consulting engineer on grade crossing problem.

Hazleton, Pa.—Council is considering paving of Mine st.

Wilkes-Barre, Pa.—Council is considering paving of Park ave. with brick.

Sumter, S. C.—Sumter County Commissioners are considering $50,000 bond issue for building and maintaining roads and bridges.

Covington, Tenn.—Citizens will vote March 14 on $14,000 bonds for graveling streets. W. R. Gift, Acting Mayor.

Humboldt, Tenn.—Bids will be received March 21 for $30,000 street improvement bonds.

Knoxville, Tenn.—Residents of Anderson ave. are urging paving of that thoroughfare with macadam.

Lonsdale, Tenn.—Council will consider issuance of $30,000 street and school improvement bonds.

Winchester, Tenn.—Franklin County will vote March 10 on $20,000 bonds for road construction.

Abilene, Tex.—Council is considering report of City Engineer and City Attorney for ordinance laying out and designing streets.

Aspermont, Tex.—Stonewall County has decided to expend $7,500 in claying roads in sundry portions of county.

Beaumont, Tex.—Jefferson County Commissioners have decided to issue $75,000 bonds for completing system of shell roads.

Beeville, Tex.—Bee County will vote May 2 on $275,000 bonds for road improvements and erection of court house.

Colorado, Tex.—Citizens will vote on $60,000 public road improvement bonds.

Commerce, Tex.—Council has ordered that all sidewalks shall be built of concrete or hard stone.

Cuero, Tex.—Cuero Justice Precinct is considering $100,000 road bond issue.

Dallas, Tex.—Board of Municipal Commissioners has ordered improvement of Commerce st.; material is to be brick block, asphalt or bitumen.

Dallas, Tex.—Extension of Akard st. is being considered by property owners.

Dallas, Tex.—City Commissioners have ordered paving of upper Commerce st.—J. M. Preston, City Engineer.

Fort Worth, Tex.—City has sold $135,000 street improvement bonds to W. H. Eddeman.

Georgetown, Tex.—Commissioners' Court has appropriated for road purposes following sums: W. R. McElroy, Georgetown precinct, $1,200; M. M. Gardner, Granger precinct, $2,000; S. G. Yakey, Taylor precinct, $2,500.

Hillsboro, Tex.—Citizens will vote April 2 on $40,000 street improvement bonds.

Richmond, Tex.—Fort Bend County Commissioners have ordered $150,000 road bond issue for Precinct No. 3.

San Angelo, Tex.—Citizens are urging election in April on extension of street paving and sidewalk construction; vit. brick favored.

San Antonio, Tex.—Council has ordered 31 property owners to construct sidewalks.

Sherman, Tex.—Bids will be received by City Secretary Kreager for $8,000 street paving bonds.

Taylor, Tex.—Williamson County will vote March 22 on $200,000 bonds for road improvements.

Temple, Tex.—Belton-Temple Traction Co. will pave between tracks in business section.

Salt Lake City, Utah.—Assistant Engineer of Streets John Duder has recommended that streets be narrowed down to about 60 ft. in width in order to make room for parking in front of residences.

Tooele, Utah.—Council has decided to advertise for bids for paving District No. 5; bids by block or for entire work.

Norfolk, Va.—Council is considering resolution appropriating $1,739.90 for improving Pearl st. in Berkley Ward.

Petersburg, Va.—City will construct about six miles of Petersburg turnpike between Petersburg and Richmond, Va.; R. D. Budd, City Engineer.

Blaine, Wash.—City has decided to pave Washington ave. with either brick or asphalt; cost $225,000.

Mount Vernon, Wash.—City will construct bitulithic paving at cost of $30,000.

Spokane, Wash.—Council is considering ordinance providing for grading and improving nine streets and paving portions of four streets.

Tacoma, Wash.—Council has decided to improve S. 7th st., cost $15,703, and N. 35th st., $4,262.—D. B. Sheller, Clerk.

Moundsville, W. Va.—Paving of Glendale County road is being urged.

Fond du Lac, Wis.—Bids will be received in about 20 days for 32,000 yds. of cement paving on three streets.

Port Arthur, Ont., Can.—Council is planning renewing of all streets in business section.

Chihuahua, Mex.—City will pave 20,000 sq. meters of principal streets with asphalt.

CONTRACTS AWARDED

Los Angeles, Cal.—Hollywood-Toluca rd., W. M. Crandall, $12,935.

Des Moines, Ia.—Paving, to J. W. Turner Improvement Co., for brick paving on E. 3d st., $1.94½ per sq. yd.; E. 4th st., between Court ave. and Market st., $1.97, and E. 4th st., between Walnut and Locust sts., $2.03, and Portal ave., $1.98; to Jas. Horrabin, creosoted wood block paving on W. 8th st., Locust to Grand ave., and on W. 8th st., Walnut to Locust sts., $2.49 per sq. yd.; to same, concrete paving on W. 8th st., $1.57, and to Geo. W. Koss, curbing 42d st., 33½c. per lin. ft.

Wichita, Kan.—Paving, bids opened Feb. 21, to Cleveland Trinidad Asphalt Paving Co., of Cleveland, O., with brick W. Douglas ave., $1.89 per sq. yd.; with brick Washington ave., using asphalt filler, $1.93 per sq. yd., and with cement filler, $1.81 per sq. yd.; to Warner Quinlan Co., with asphalt on Clifton st. at $1.98 per sq. yd., and to the Kettle River Paving Co., of Minneapolis, Minn., with creosote wood block 1st st. at $1.87⅞ per sq. yd.

Lexington, Ky.—Paving S. Ashland ave. with asphalt, to Carey & Reed, Philadelphia, $2.15 per sq. yd.

St. Paul, Minn.—Curbing Isabel st., to O'Neil & Preston, $1,174; curbing Laurel ave., to Peter Dickson and Ben Kolberg, $1,824.

Asbury Park, N. J.—Paving Park ave. bridge over Deal Lake with wood blocks, to Avon Construction Co., Avon, $9,770; Nelson Meredith Co., $10,432; B. L. Smock, Asbury Park, $12,810; U. S. Wood Preserving

Co., New York, $10,999; Schwiers, Sutton Co., $12,272; Chas. E. Burd, Red Bank, N. J., $11,169.—E. E. Throckmorton, 552 Broadway, Long Branch, Engineer.

Glen Cove, N. Y.—Road, to Meserole & Underhill, city, $2,049.

Cincinnati, O.—Paving Carthage ave. with granite, to Thos. P. Strack, 8th and Llum sts., $160,358.

Youngstown, O.—Shehy st., brick pavement, to Turner & Olson, $1,773; St. Louis ave., brick pavement, to S. H. DeGroodt, $11,799; Truesdale ave., brick pavement, James McCarron, $15,081; Duquesne st., brick pavement, to Kennedy Bros., $11,236; Evergreen ave., brick pavement, to Martin Fleming, $10,785; Hilker st., brick pavement, to Kane & Comiskey, $2,285; Darrow st., sewer, to Pat Grady, $1,161; Shehy st., grading, to Kane & Comiskey, $1,445, and Sycamore and Andrews ave. district sewer, to P. Diorio, $1,341.

Muskogee, Okla.—Paving Elmira st., to Oklahoma Construction Co.; paving Dayton st., to Dennis-McNerney Co., $1,585.20, and 14th st., to J. C. Heman Co., $2,550.30.

Dallas, Tex.—Paving East Side ave., to Texas Bitulithic Co., $2.30 per sq. yd.

Fort Worth, Tex.—Paving three streets, to Bitulithic Co.

Waco, Tex.—Building 15 blocks of vit. brick pavement, to Ockander Bros., $1.72 per sq. yd. for brick laid flat with bituminous filler to deaden sound, and $2.05 for brick laid edgewise with cement filler.

Norfolk, Va.—Granby st., 4-in. Norfolk made creosoted wood block, to United States Wood Preserving Co., $46,715.

Petersburg, Va.—Paving Market st., to Perkinson & Finn, $2.47 per sq. yd.

Roanoke, Va.—Granolithic pavement on three streets, to Tinsley Construction Co., Box 657; cost $12,000.—F. L. Gibboney, Engineer.

Spokane, Wash.—Grading and sidewalking Garfield st., to Sibley Contracting Co., $31,500; paving 9th, 8th and Maple aves., to Spokane Petrolithic Paving Co., $7,244; paving Lincoln st., to John Fife, $9,844; grading and sidewalking Lacey st., to Wetzel, Foster & Hindle, $11,775; grading and sidewalking Magnolia st., to C. M. Payne, $3,495; grading and sidewalking Walton ave., to Massie Bros. & Long, $3,794; grading and sidewalking Addison, to C. M. Payne, $1,795.

Milwaukee, Wis.—Retaining wall for Highland blvd., to S. C. Coddington, $5,323.

BIDS RECEIVED

Denver, Col.—Grading, curbing and surfacing a portion of Boulevard F, J. Fred Roberts, $26,092, and Commonwealth Construction Co., $22,351; Boulevard, between Denver and Golden, Frank A. Maxwell, of Georgetown, $30,412 for screened gravel and $52,324 for crushed basalt; Russell & Dunhill, $30,779 for screened gravel and $57,252 for crushed basalt.

Atlantic, Ia.—Paving: Bryant, Ford & McLaughlin Co., Waterloo, Ia., $2.04 per sq. yd. for combination pavement, and Capital Concrete Construction Co., Springfield, Ill., $2.03 per sq. yd. for brick and $1.97 for asphalt.

Louisville, Ky.—Walks—Construction of granitoid walks, Henry Bickel Co., Staebler & McDonald.

Minneapolis, Minn.—150,000 sq. yds. 4-in. creosoted wood paving blocks, per sq. yd., Ayer & Lord Tie Co., Chicago, Ill., yellow pine, $1.90; Kettle River Quarries Co., Minneapolis, Norway or tamarack, $1.39½, yellow pine, $1.56; U. S. Wood Preserving Co., New York, Norway or tamarack, $1.38, yellow pine, $1.58; Republic Creosoting Co., Minneapolis, Norway or tamarack, $1.32¾, yellow pine, $1.55. Furnishing 3,000 cu. yds. crushed granite f. o. b. per cu. yd., Minnesota Flint Rock Co., New Ulm, Minn., $2.22; New Ulm Stone Co., New Ulm, Minn., $2.19; Wisconsin Granite Co., Chicago, Ill., $2.15; Western Granite Co., St. Cloud, Minn., $1.98.

New York, N. Y.—Regulating, grading, setting curbs, flagging, cut sidewalks, etc., at 222d st., from Bronxwood ave. to Carpenter ave.: F. A. Curry, lowest bidder, as follows: 14,200 cu. yds. earth excavation, 52c.; 4,000 cu. yds. rock excavation, $1.50; 12,000 cu. yds. fill., 1c.; 4,725 lin. ft. new curb, 65c.; 18,750 sq. ft. new flagging, 20c.; 1,450 sq. ft. new bridgestone for crosswalks, 45c.; 260 cu. yds. dry rubble masonry in retaining walls, culverts and gutters, $1; 25 cu. yds. rubble masonry, in mortar, $2; 200 lin. ft. existing 6-in. pipe sewer to be lowered, $1; 2 drainage inlets, Type "A," each, $40; 1,150 lin. ft. new guard rail, 10c.; total, $21,683; totals of other bids: Briggs & McLaughlin, $25,084; J. Farrell, $23,437; F. V. Smith, $22,690; M. Marone, $23,376; L. C. Rose, $22,287; M. Menalla & F. Vaccarro, $23,297; Wakefield Contracting Co., $22,073. Furnishing and delivering 22,000 cu. yds. broken trap-rock stone and 8,000 cu. yds. broken trap-rock stone screenings, J. E. Conklin, lowest bidder, $1.65 per cu. yd.; total, $49,500; Clinton Point Stone Co., $55,500, and Manhattan Trap Rock Co., $56,700.

New York, N. Y.—Furnishing and delivering broken trap rock stone and screenings, Borough of Bronx: Jacob E. Conklin, 135 Front st., New York, $49,500; Clinton Point Stone Co., 115 Broadway, $55,500; Manhattan Trap Rock Co., 30 Church st., $56,700.

Lynchburg, Va.—Paving with granite blocks, 9th, Commerce and 8th sts., J. R. Ford, City, low bidder; about $33,300.

Everett, Wash.—Improving Grand ave.: J. B. Snyder, $138,000; Thorsvig & Miley, $141,000; R. B. McAdam, $140,355; Barber Asphalt Co., $140,485; Engineer's estimate, $142,122.31.

Spokane, Wash.—Grading and sidewalking First ave., Wetzel, Forster & Hindle, low bidders, $17,760.

Tacoma, Wash.—Paving 6th ave., W. J. Murphy, $159,893; Barber Asphalt Paving Co., $164,500.—W. C. Raleigh, City Engineer.

Oshkosh, Wis.—Paving portion of State st., L. A. Larsen, city, tar macadam, $8,949; cement, $8,287; brick, $12,561, and Blome cement, $10,153; Christ. Johnson, city ,with creosote block, $14,415.

SEWERAGE

Attalla, Ala.—Council has decided to install complete sewer system.

Phœnix, Ariz.—Council has approved plans of Olmsted & Gillellen for deep sewer and has called election on $400,000 bonds for April 7.

Searcy, Ark.—Sewer and Water Commissioners have received report of engineer employed by city to prepare estimate, plans and specifications for sewer system.

Oroville, Cal.—Committee of Civil Engineers, consisting of Messrs. R. Leo Van der Naillen, O. W. Jasper, County Surveyor M. C. Polk and City Engineer B. L. McCoy, has submitted to City Trustees preliminary report on plans and specifications for proposed sewer system; engineers recommended a bond issue of at least $120,000.

San Francisco, Cal.—Residents of Peralta Heights and Silver Heights are urging construction of sewers.

San Francisco, Cal.—Mission Promotion Association is urging need of sewerage on three streets.

Colorado Springs, Col.—Lincoln ave. residents have petitioned Council for installation of sewers west to Colorado City.

New Castle, Del.—Need of surface sewers is being urged.

Atlanta, Ga.—City is considering employment of Hering & Fuller, 170 Broadway, New York, as Consulting Engineers for proposed sewer system and disposal works.—R. M. Clayton, City Engineer.

East Lake, Ga.—Solomon-Norcross Co., 1622 Candler Bldg., Atlanta, has prepared plans for sewerage system equipped with disposal plant; estimated cost $10,000.

Gainesville, Ga.—City will call election on $12,500 bonds for extension of sewer system.—H. S. Jaudon, Engineer; R. D. Mitchell, Mayor.

Chicago Heights, Ill.—Board of Local Improvements has adopted ordinance for construction of system of storm sewers.—W. E. Lennertz, Secretary.

Fairfield, Ill.—Board of Local Improvements has decided to construct gravel sewers; cost $25,000.—C. W. Brown, of Jacksonville, Engineer.

Libertyville, Ill.—City is considering constructing sewer to connect with septic tank; cost $12,000.

St. Charles, Ill.—Engineer Geo. N. Lamb is estimating cost of sanitary sewer system; plans include 14½ miles of mains, with big outlet for the whole system at E. 6th st. and river, where sanitary sewer depository may be erected; work includes installation of 205 manholes and 31 flush tanks.

Greenfield, Ia.—Engineers are surveying city preparatory to constructing system of sewers and to establish grades for street paving to be done this year.

Grinnell, Ia.—Council has instructed City Engineer to prepare plans for sewers and water main extensions in West Grinnell.

Caldwell, Kan.—Engineers Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., have prepared plans for a vit. pipe sewer system.

Herington, Kan.—Committee appointed by Commercial Club, consisting of F. E. Munsel, A. J. McAllister and D. E. Lamb, has decided upon need of sewerage.

St. John, Kan.—Engineers Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., have about completed final plans for system of sanitary sewers.—A. O. Seevers, City Clerk.

Topeka, Kan.—Council has decided to construct sewer on Huntoon st.—C. B. Burge, City Clerk.

Corydon, Ky.—Citizens will vote March 21 on $45,000 sewer and water bonds.

Winchester, Ky.—City has sold sewerage bond issue to M. T. McEldowney.

Centreville, Md.—Queen Anne County Commissioners have petitioned Legislature for authority to issue $10,000 bonds for construction of sewer system.

Haverhill, Mass.—City will sell $156,000 bonds for permanent work on sewers and streets.

Lynn, Mass.—City Engineer Geo. I. Leland is preparing plans for construction of sewers in Lakeside; cost about $15,000.—Jas. E. Rich, Mayor.

Swampscott, Mass.—Town will vote March 21 on construction of sewers in Redington st., Farragut rd., Crescent and other streets.

Pontiac, Mich.—City will construct lateral sewer on Oak Hill st.; cost $1,025.

Greenwood, Miss.—Council has instructed R. C. Huston, Engineer, to prepare plans and specifications for drainage system; $30,000 bonds voted.

Hastings, Neb.—Council has passed an ordinance for construction of sewer on Minnesota ave.

Atlantic City, N. J.—Mayor Franklin P. Stoy has recommended adequate drainage facilities for west side.

Hoboken, N. J.—Sewer Committee has recommended various improvements to sewer system.—A. T. Pflug, Chairman.

South Amboy, N. J.—State Board of Health has approved plans for proposed sewer system.

Woodbury, N. J.—Council has ordered Street Committee to take up matter of sewering new building tract in West Woodbury.

Binghamton, N. Y.—Board of Aldermen has declared intention to build 10 sewers.

Oneonta, N. Y.—Council has ordered construction of sewer on Main st. prior to laying of pavement.

Albemarle, N. C.—Board of Public Works has received estimates for construction of sewer system.

Franklin, N. C.—Citizens will vote March 22 on $20,000 bonds for construction of sewer system and water works.

Carrington, N. D.—City will engage Oscar Claussen, Engineer, St. Paul, to draw plans for installation of sewer system.

Bucyrus, O.—Council has passed ordinance for construction of sewer in portion of Lake st.—August Broemel, Clerk.

East Youngstown, O.—Village Engineer Geo. Montgomery will prepare plans for sewer in Broad st.

Lorain, O.—Council has selected L. A. Chapin, of Canton Construction Co., Canton, O., to prepare preliminary survey and blue print for proposed sewer system.

Enid, Okla.—Citizens have voted $15,000 bonds for additions to sanitary sewer and $10,000 for completion of storm sewer as contracted.

Oklahoma City, Okla.—Mr. Lancashire, of Cameron Septic Tank System, has been authorized by Council to draw up plans and specifications for tank capacity of 500,000 gallons daily.

La Grande, Ore.—Citizens will vote March 14 on $40,000 bonds for sewer system.

Lehighton, Pa.—Council has adopted petition for construction of $50,000 sewerage system.

Providence, R. I.—Plans are being completed for sewer from Eagle st. to Academy ave.—O. T. Clapp, City Engineer.

Rock Hill, S. C.—Citizens have voted $100,000 sewer bonds; contracts will be awarded in 60 days.—C. K. Schwrar, Secretary Chamber of Commerce.

Sioux Falls, S. D.—Bids will be received about April 1 for construction of brick, concrete, stone or pipe sewers; cost $150,000.—J. W. Johnston, City Engineer.

Knoxville, Tenn.—Construction of sanitary sewer along Third Creek is being urged. Alderman J. L. Nelson is interested.

Memphis, Tenn.—Contracts will soon be let for construction of sewers at Mt. Arlington and vicinity, to include nine streets.

Corpus Christi, Tex.—City will readvertise for bids for $140,000 sewer bonds.

Norfolk, Va.—Council has adopted resolution appropriating $1,551.50 for sewering three streets.

Spokane, Wash.—Council has passed ordinance for sewer on Main ave. and ordered plans for sewers on six avenues.

Clarksburg, W. Va.—Consulting Engineers Hering & Fuller, New York City, have prepared plans for system of sewers.

Oshkosh, Wis.—Plans are being prepared by City Engineer Geo. Randall for sewers on Doty and 16th sts. and Minnesota and Lincoln aves.—J. E. Mallory, President Board of Public Works.

Medicine Hat, Alta., Can.—Council has decided to expend $60,000 in extending sewerage system and cement walks.

CONTRACTS AWARDED

Richmond, Cal.—Laying 8-in. sewer in Nevin, Barret, C, B, and A sts., to Michael Murphy; also for laying 6-in. sewers in Ohio, Florida, Maine, Virginia and 7th sts., to Dunbrow & White.

Sacramento, Cal.—Furnishing and install-

ing at sewage pumping station additional pumping unit, to Chas. G. Moore & Co., $19,070.

Des Moines, Ia.—Sewers on 4th st., to J. L. Hansman, 94.4c. per lin ft. and on E. 3d st., E. 12th and 13th sts., to O. P. Herrick, $2.24 per lin. ft.

St. Louis, Mo.—Claise Creek sewer, to Thomas Flynn, $23,319.

Newark, N. J.—East Branch storm water sewer No. 2, to D'Amato Stefanelli, $16,948.

Washington, N. J.—Sewer system and sewage disposal works, bids opened Feb. 14, to Union Bldg. & Construction Co., of Passaic, $50,230.—Clyde Potts, 30 Church st., New York, N. Y., Engineer.

Louisville, O.—Construction of sewers and sewage disposal plant, to W. H. Ralston, Mount Vernon, $26,616; work includes 1,500 lin. ft. of 12-in., 3,920 lin. ft. of 10-in., 21,215 lin. ft. of 8-in., 165 lin. ft. of c.-i. pipe, 72 manholes, 16 flush tanks, four filters, 104.5 ft. x 104.5 ft., one dosing tank 24 ft. x 24 ft., one double screen chamber, 3 ft. x 8.54 ft., one pump well, 8 ft.x8 ft., one settling tank 10 ft. x 49 ft., one settling tank, 8 ft. x 49 ft., wtih all necessary valves, piping, gates, etc.; 15,000 cu. yds. cut and 7,805 cu. yds. sand and gravel in filters.

Erie, Pa.—Sewers in 3d st., to Edward Driscoll; Plum st., to Dennis O'Brien; 9th st., to Dennis O'Brien; 2d st., to same bidder; Brown's ave., to Joseph McCormick & Brother.

San Antonio, Tex.—Sewer systems in improvement districts 12 and 13, to Rees & Peters, $23,551.

Parkersburg, W. Va.—Sewers on three streets, to Cantrell Construction Co., $2,295.82.

BIDS RECEIVED

Sioux City, Ia.—Sewers in Plymouth and other streets in Cole's and Chase's additions, L. Christenson & Co., city, low bidders, $10.851.

Brooklyn, N. Y.—Sewers, Van Alst and Rayntar aves., to J. Sigretto, $32,523; 4th ave., to Gabriel Hill, $5,632.57; Webster ave., to Gabriel Hill, $475.10.

WATER SUPPLY

Gadsden, Ala.—Citizens have voted $60,000 water works bonds.

Conway, Ark.—Council has appointed commission to investigate cost of installing water works; cost $60,000 to $100,000; well drilling contemplated.

Harrison, Ark.—Harrison Water Co. will construct 25,000 ft. of mains and two additional storage tanks, city has ordered installation of fire hydrants every 600 ft. on all mains laid.

Searcy, Ark.—Water and Sewer Commissioners have received report of engineer employed to make estimate, plans and specifications for water works.

Alturas, Cal.—Good Government Club has asked for inauguration of water system.

East Sacramento, Cal.—Water Co. has plans prepared for proposed water system, including construction of large water tower, capacity 150,000 gals., 100 ft. high and laying of about 800,000 ft. of pipe.

Gilroy, Cal.—Council has decided to advertise for bids for boring two wells to install the new pumping plant.—Walter G. Fitzgerald, Mayor.

Oakland, Cal.—Patterson Water Co. has been incorporated by Vance McClymonds and others; capital $200,000.

Ocean Park, Cal.—Extension of salt water fire mains to Garden district east, and to Short Line Beach section is favored.

Palo Alto, Cal.—Board of Public Works has $7,000 available for water storage reservoir.

Red Bluff, Cal.—Town is considering purchase of plant of Antelope Water Co.

San Francisco, Cal.—Supervisors have finally passed ordinance providing for issuance of $45,000,000 bonds to cover cost of "acquisition, construction and operation" of municipal water supply and necessary work, the sources of system to be Lake Eleanor, Tuolumne River and its tributaries.

San Francisco, Cal.—Board of Public Works has called upon Supervisors for additional appropriation of $15,000, to be used in construction and equipment of 2d and Townsend sts. pumping station.

Santa Ana, Cal.—City is considering purchase of carload of 4-in. c.-i. pipe.

Winchester, Cal.—Patton Bros. Co. has been incorporated to erect a pumping plant and install water works.

Rocky Ford, Col.—City will install water system; cost $500,000. R. A. Sawyer is interested.

Trinidad, Col.—City will install centrifugal pumps and electric motors.

Noank, Conn.—Citizens are urging better water supply.

Waterbury, Conn.—Bids will be received March 14 by City Clerk for $200,000 water bonds.

College Park, Ga.—City is considering bond issue for construction of water works.

Edison, Ga.—Citizens have voted $17,000 bonds for construction of water works.—C. J. Jenkins, Mayor.

Gainesville, Ga.—City will call election on $17,000 bonds for water plant and additional water mains.—H. S. Jaudon, Engineer; R. D. Mitchell, Mayor

Marshallville, Ga.—Elberta Crate Co. will construct water works and electric light plant.—J. M. Simmons, Manager.

Shellman, Ga.—Citizens have voted $8,000 bonds for improvements to water works, including air lift fire pump, 100,000-gal. concrete reservoir and 4,500 ft. 4-in. c.-i. pipe.—C. P. Payne, Superintendent.

Anna, Ill.—City is considering construction of complete water works system.

Chicago, Ill.—Establishment of a high-pressure water system with interior standpipes in every building more than 100 ft. high is being considered by Building Committee of Council.

Joliet, Ill.—City will readvertise for bids for heater, to be installed at water works plant.

Lincoln, Ill.—City will soon make extension to water system and install more hydrants in business section.

Morgan Park, Ill.—Installation of more adequate water supply is being urged.

New Athens, Ill.—Residents will soon vote on installation of system of water works.

Quincy, Ill.—Council will consider purchase of pump for water works; cost $18,000.

Roanoke, Ill.—City will install water system.—A. L. Ray, Mayor.

Rock Island, Ill.—Council has decided to construct water main on 37th st.; cost $3,186.70.

Silvis, Ill.—Town will take up question of installing meters.

Sycamore, Ill.—Quantity of 4-in. pipe will be purchased for extension of mains on 4th st.

Anderson, Ind.—Construction of settling basin at water plant is being considered; cost about $2,500.

Green Castle, Ind.—City is considering construction of filtration plant.

Hammond, Ind.—Board of Public Works has adopted resolution for lead water pipe in Waltham st.—Adam R. Ebert, President.

Peru, Ind.—Council has asked for bids for construction of boiler plant at city pumping station.

Arkansas City, Kan.—Installation of additional water supply is being considered.

Caldwell, Kan.—Plans are being prepared by Engineers Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., for system of water works.

Cuba, Kan.—Construction of system of water works is being urged.

Frontenac, Kan.—Bids will be received by Wm. Hromek, City Clerk, for $15,000 water extension bonds.

Kansas City, Kan.—Bids will be received by Board of Park Commissioners in April for water service pipe, including 200 lin. ft. 2-in., 50 lin. ft. 1¼-in. and 660 lin. ft. 1-in. galvanized iron pipe; also nine street washers.—L. H. Ellis, Engineer.

Millersburg, Ky.—City has selected F. O. Siebert, 215 East Main st., to prepare plans for construction of water works.

Winthrop, Me.—Board of Trade is considering installation of municipal water supply system. F. I. Bishop is interested.

Brockton, Mass.—Fire Chief Marston has asked for installation of high pressure system.

Haverhill, Mass.—Engineer Currier, of fire department, has recommended need of standpipes.

Westfield, Mass.—Dr. Arthur Downey, of Springfield, and J. M. Stevenson, of Pittsfield, with residents of Granville Center, will establish a water system for town if Legislature acts favorably on petition to incorporate company.

Essexville, Mich.—John H. Blomshield, Civil Engineer, is preparing plans and estimates for water system.

Grand Rapids, Mich.—Citizens will vote on $500,000 bonds for installation of filtration plant.

Houghton, Mich.—Florida Water Co. has decided to install meters on every service already installed and on new services as they are ordered.

Ironwood, Mich.—A. E. Appleyard, Boston, and H. P. Harmon, Portland, Me., are considering purchase of water, lighting and street railway companies operating in this city and at Hurley; water service would be extended.

Minneapolis, Minn.—Council has ordered laying of 6-in. water mains in 13 streets, 8-in. in three streets, 12-in. in three streets and 16-in. in five streets.—H. N. Knott, Clerk.

Stillwater, Minn.—City is considering purchase of present water works system.

Gulfport, Miss.—City will consider extension of 8-in. water main up 25th st.

Malden, Mo.—Citizens have voted $20,000 bonds for enlarging and improving water works and electric light plant.

Grand Junction, Neb.—City will install water system.—T. M. Todd, Mayor.

Omaha, Neb.—Chloride of lime is to be used to improve the condition of the city water.—M. T. Barlow, President of Water Board.

Atlantic City, N. J.—Mayor Franklin P. Stoy has recommended acquisition of all sources of mainland water to pumps and increase supply and erection of water reservoirs on Absecon Island.

Bridgeton, N. J.—Clyde Potts, Engineer, will make study of present and future water supply.

Springfield, N. J.—Short Hills Water Co. will install additional fire hydrants.

Trenton, N. J.—Board of Water Commissioners has officially determined to employ expert engineer before proceeding any further towards selection of filtration system for installation in this city.

Wharton, N. J.—Borough Council has decided to call special election on municipal water supply.

Woodbury, N. J.—Council has ordered Street Committee to take up matter of constructing water mains in new building tract in West Woodbury.

Cimarron, N. M.—Geo. H. Webster is considering construction of water supply system.

Afton, N. Y.—Board of Water Commissioners is considering extension of pipe line to another large spring.

Cherry Creek, N. Y.—Installation of water works is being considered.

Cornwall, N. Y.—Village will vote on $30,000 bonds to acquire land and build reservoir.

Coxsackie, N. Y.—Board of Trade is considering extensive improvements to water system.

Rochester, N. Y.—Board of Contract and Supply has asked for bids for water works gates.

Albemarle, N. C.—Board of Public Works has prepared estimates for construction of water works.

Franklin, N. C.—Citizens will vote March 22 on $20,000 bonds for construction of water works and sewer system.

Canton, O.—Erection of standpipe will be considered by Council.

Cleveland, O.—City will expend $250,000 in extending high pressure water service; water system will also be extended to Warrensville farm. Director Lea and Mayor Baehr are interested.

Defiance, O.—Council will consider erection of municipal water and light plant.

Lorain, O.—Council has ordered $50,000 bond issue for constructing water works intake.—J. F. King, Mayor.

Sandusky, O.—Service Director John Bing has instructed Clerk Joseph Loth to advertise for bids for water meters.

Waverly, O.—Bids will be received March 26 for $35,000 water works bonds.—E. P. F. Smith, City Clerk.

El Reno, Okla.—Citizens will vote on $200,000 bonds for construction of system of water works.

Enid, Okla.—Citizens have voted $25,000 bonds for improvements and extensions to water works system.

Baker City, Ore.—Proposed cost of pipe line from Salmon Creek to settling tank, with construction of parallel line and twin reservoir, is estimated by City Engineer Henig at $200,000.

Gresham, Ore.—Voters have authorized $15,000 bond issue for water supply.

Hood River, Ore.—Bids will soon be received for construction of system of water works.—H. B. Langille, City Recorder.

Smithton, Pa.—Electric Light & Water Co. will secure franchise to construct large tank, drill wells and lay mains for water supply for town.

Florence, S. C.—City has selected Newton A. Johnson, of Florence, as engineer to supervise extension of water works.

Rock Hill, S. C.—Citizens have voted $150,000 water bonds; contracts will be let in 60 days.—C. K. Schwrar, Secretary Chamber of Commerce.

Johnson City, Tenn.—Council has voted to purchase plant of Watauga Water Co. for $140,000.

Newport, Tenn.—Mayor and Board of Aldermen has rejected water works ordinance which provided for $50,000 bond issue for water works after passing on first and second readings.

Bonham, Tex.—Citizens will vote on $15,000 bonds for improvements to water works.

Corpus Christi, Tex.—Committee on Water Works extensions has recommended laying of 51,535 ft. of 4-in. and 6-in. mains and installation of 166 fire plugs.—Commissioner Segrest, Chairman.

Denison, Tex.—City Commission has ordered over 4,000 ft. of water main pipe and 22 hydrants, valves and fittings, to be used in extending municipal water system; cost of material alone $4,660.

Fort Worth, Tex.—City has sold $275,000

water works extension bonds to W. H. Eddleman.

Greenville, Tex.—Citizens will vote March 21 on $20,000 bonds for improvement of water works.

Pearsall, Tex.—Company has been formed to operate water works, ice plant and electric lights. G. F. Preslar, G. F. Hindes and others are interested.

Sherman, Tex.—Bids will be received by City Secretary Kreager for $12,000 water extension bonds.

Willard, Utah.—Citizens will soon vote on $9,000 bonds to install water works system.

Fredericksburg, Va.—Plans have been prepared for extension of water works in western portion of city; cost $2,500.—S. J. Quinn, Superintendent.

Spokane, Wash.—Council is considering ordinance providing for water meters for city.

Tacoma, Wash.—Council has ordered laying of 12-in. c.-i. water mains and appurtenances in Improvement District No. 550.—L. W. Roys, City Clerk.

Oconomowoc, Wis.—City will expend $15,000 in extending water works plant.

Ottawa, Ont., Can.—City Engineer Ker has recommended construction of reservoir and water purification or filtration plant; cost $500,000.

Saskatoon, Sask., Can.—City will expend $90,000 in water works construction.

Chihuahua, Mex.—City is planning third settling tank near filters for water system; capacity of filters will be tripled.

CONTRACTS AWARDED

Waterbury, Conn.—Pipe line from new storage reservoir to connect with the main leading to city, to S. Camboia, Boston, $14,281. The other bids were as follows: Lambo & Co., $14,848.75; Field, Barker & Underwood, of Philadelphia, $20,255.90; Fred T. Ley & Co., $23,597.42; Henry Spinach Construction Co., $23,933.70.

Ely, Minn.—Furnishing 12-in. c.-i. water pipe, to Jas. B. Clow & Sons, Chicago, Ill., $29.50 per ton.

Minneapolis, Minn.—Eight-post water tower and tank, to Chicago Bridge & Iron Works, $6,350.—H. N. Knott, City Clerk.

Albemarle, N. C.—Electric light plant, to Tucker & Laxton, Charlotte.—J. M. Bandy, Greensboro, Engineer in Charge.

Nottingham, O.—Water mains, to Baldwin Bros., Rose Bldg., Cleveland, $11,970.

Central Point, Ore.—Constructing water works, to Jacobson Bade Co., Portland, $21,300.

Kaysville, Utah.—Furnishing pipes and fittings, to Portland Wood Pipe Co., Portland, Ore.; amount of pipe is 24,085 ft. of 4-in., 11,070 ft. of 6-in., 9,745 ft. of 8-in., with valves, specials, etc.

Ottawa, Ont., Can.—Supplying and delivering 3,000 lin. ft. of intake pipe, to International Marine & Signal Co., Broad st., $17,290.

BIDS RECEIVED

Buffalo, N. Y.—Equipment of new water works pumping station, five pumps, Holly Mfg. Co., low bidders, $674,769; boilers, Heine Safety Boiler Co., low bidders, $155,000; coal and ash conveying machinery, Bartlett-Snow Co., low bidders, $32,750; electric crane, White Foundry Co., low bidders, $9,900, and feed pump, Dean Steam Pump Co., low bidders, $24,330.

Ft. Mackenzie, Wyo.—Lining 1,000,000-gal. concrete reservoir with water proofing felt and brick, Wm. Ganard & Co., Sheridan, low bidders, $8,098.

LIGHTING AND POWER

Birmingham, Ala.—City will improve municipal electric light plant, located in North Birmingham.

Escondido, Cal.—Escondido Utilities Co. will petition Council for permission to lay about 10 miles of pipe, from 2 to 6 in.

Redwood City, Cal.—Benjamin Cunna has secured franchise for lighting Halfmoon Bay.

San Francisco, Cal.—Sacramento Gas, Electric and Railway Co. has applied for franchise on V st.

Denver, Col.—Denver Gas & Electric Light Co. will spend nearly $1,000,000 in extensions and improvements during year.—Frank W. Frueauff, General Manager.

Edison, Ga.—Citizens have voted $8,000 bonds for construction of electric light system.—C. J. Jenkins, Mayor.

Gainesville, Ga.—City will call election on $5,000 bonds for extension of light plant.—H. S. Jaudon, Engineer; R. D. Mitchell, Mayor.

Marshallville, Ga.—Elberta Crate Co. will construct electric light plant and water works.—J. M. Simmons, Manager.

Black Foot, Ida.—Idaho Consolidated Power Co. has been granted franchise to construct and operate electric light plant and telephone system.

Lewiston, Ida.—Lewiston Gas Co. has tendered proposal to Council to furnish city with double light now secured from electric company and at less cost.

Terre Haute, Ind.—Terre Haute, Indianapolis & Eastern Traction Co. will install substation on its Dunreith-Newcastle division. D. F. Reach, Terre Haute, Purchasing Agent.

Keokuk, Ia.—Government Engineer M. S. Barnes has been engaged to prepare plans for proposed power dam.

Lincoln, Kan.—Citizens will vote March 24 on $12,000 bonds to purchase engine for light plant.

Salina, Kan.—F. C. Miller, Kansas City, has asked Council for electric light and gas franchise. C. H. Randle, Chicago, is interested.

Wichita, Kan.—Wichita Gas Co. has announced its intention to expend $400,000 to improve service in this city and to prevent the numerous shortages of gas supply of past winter; company is preparing to replace 8-in. main from Canay, south into Oklahoma with 18-in. main.

Boston, Mass.—Boston & Northern Street Railway will reconstruct its power plant on Merrimack st.—G. W. Palmer, Jr., Electrical Engineer.

Kalamazoo, Mich.—Board of Education has selected Brush, Anderson & Ammerman, Engineers, Penobscot Bldg., Detroit, to prepare plans and specificatoins for new heating, ventilating and power plant for Lake st. school.

Ironwood, Mich.—A. E. Appleyard, Boston, and H. P. Harmon, Portland, Me., are considering purchase of electric lighting, water and street railway companies operating in this city and at Hurley; transmission lines will be built.

Crookston, Minn.—Application has been made to Council for gas franchise by corporation of Cleveland.

Faribault, Minn.—The Polar Star Electric Co. is considering installation of 14-ft. electric light posts, with c.-i. brackets; cost $70 each.

Owatonna, Minn.—Citizens will vote on $50,000 bonds for erection of municipal electric light plant.

Malden, Mo.—Citizens have voted $20,000 bonds for enlarging and improving electric light plant and water works.

David City, Mont.—Citizens have voted $20,000 bonds for installation of lighting and water plant.

Terry, Mont.—Company will be organized to furnish electric lights and power.

Omaha, Neb.—Council will again take up matter of installing 50 blocks of decorative street lights.

Atlantic City, N. J.—Mayor Franklin P. Stoy has recommended improvement of boardwalk illumination.

Bloomfield, N. J.—James E. Brooks, representing Lighting Committee of Board of Trade, has requested Town Council to ask the Public Service Corporation for map of their lighting system in the town, showing poles and wires; town may purchase lighting system when present contract expires.

Hackensack, N. J.—Frank M. Taylor and John C. Allen, of Light Committee of the Hackensack Improvement Commission, are considering securing for city white way for Main st.

Linden, N. J.—Fourteen additional gas lights have been authorized by Borough Council.

Santa Fé, N. M.—Plans are being prepared by Rio Lucero Power Co. to extend its transmission lines to Taos and vicinity for which rights-of-way have been secured.

Silver City, N. M.—Gila River Power Co. has been incorporated: capital $6,000,000. Thomas Lyons, Gila; William D. Murray, Silver City; John R. Bartlett, 2 Wall st., New York, Directors.

Brooklyn, N. Y.—Edison Electric Illuminating Co., 360 Pearl st., will expend about $2,500,000 for equipment of its Pearl st. plant.—W. F. Wells, General Superintendent.

Rutherfordton, N. C.—Isothermal Traction Co. is planning construction of hydroelectric plant on Broad River.—Kenneth S. Finch, Charlotte, N. C., President.

Wadesboro, N. C.—Walter E. Brock will install hydroelectric plant on Rocky River; 500-ft. hollow dam with submerged power house; develop 6,000 h. p.; cost $600,000.

Defiance, O.—Council will consider erection of light and water plant.

Alva, Okla.—Winters Lighting Co. has been incorporated with $10,000 capital stock by G. W. Winters, Walter Winters and H. B. Winters.

Ridley Park, Pa.—Police, Light and Fire Committee has recommended that arc lights take place of small incandescents used on some of principal intersections of streets.

Scranton, Pa.—Council has received 81 petitions for new lights.

Florence, S. C.—Black Creek Power Co. has decided to build water power electrical plant to transmit 3,500 h.p.

Rock Hill, S. C.—Citizens have voted $35,000 bonds for municipal lighting plant; contracts will be let within 60 days.—C. K. Schwrar, Secretary Chamber of Commerce.

Chattanooga, Tenn.—Chattanooga Railway & Light Co. will improve plant, including installation of mechanical stoker and forced-draft system.

Henning, Tenn.—Henning Electric Light & Ice Co. has been organized with S. M. Ray, President.

Alvin, Tex.—P. H. Manaker will enlarge electric light plant lately purchased.

Denison, Tex.—Council has instructed the City Attorney to draw up an ordinance requiring the removal of all light, phone, telegraph and other poles on Main st.

Flatonia, Tex.—Committee of Council to investigate electric light plant proposition is conferring with D. Jones of Nebraska; city has been without lights for 12 months.

Fort Worth, Tex.—City has sold $25,000 electric light extension bonds to W. H. Eddleman.

Snyder, Tex.—Snyder Electric & Ice Co. has been organized by W. A. Fuller, E. W. Clark, Arthur Yange and others.

Bellingham, Wash.—Whatcom County Railroad & Light Co. has completed plans for erection of brick power house on York st.; cost $174,000.

Ellensburg, Wash.—Council is considering installation of 50 incandescent lights.

Georgetown, Wash.—City has granted franchise to Robert M. Jones to construct and maintain gas, electric light and power plants.

Port Angeles, Wash.—Port Angeles Power & Electric Co. has been incorporated; capital $30,000. Frank MacKean, R. H. Bethel, Geo. D. Brown, and others, Incorporators.

Wheeling, W. Va.—Wheeling Electrical Co. has made application to Council for franchise to maintain electric lines to furnish light, heat and power throughout city for a period of 50 years.

Laramie, Wyo.—City has granted 30-year franchise to E. J. Bell and R. D. Stewart to supply electricity for lamps and motors; power to be obtained from Nach's Fork and Libbey Creek; cost of plant about $300,000.

Montreal, Que., Can.—Central Canada Power Co. has been incorporated, capital $5,000,000, to construct and operate electric power and hydraulic works.—J. C. Hickson, S. B. Hammond and G. C. Papineau, Montreal, Incorporators.

Wetaskiwin, Alta., Can.—Citizens will at once vote on by-law to raise $5,000 for improving and extending existing municipal electric light and power plant.—E. Roberts, Secretary-Treasurer.

Tacoma, Wash.—Bids were received Feb. 21, by H. J. McGregor, Commissioner of Public Works, for constructing the headworks and tunnel for a hydroelectric power plant on the Nisqually River. The bidders were (a) Wright, Sweeney & Cummings, awarded contract; (b) Hans Pederson & Olaf Olson; (c) B. W. Kibler, all of Tacoma, Wash. The itemized bids follow:

HEADWORKS	(A)	(B)	(C)
31 acres clearing	$191.50	$95.00	$100.00
4,000 cu. yds. earth excavating	.96	.28	.50
21,700 cu. yds rock excavation	1.75	1.45	2.00
120 sq. yds. riprap	3.45	1.75	2.00
19,470 cu. yds. concrete	5.75	7.50	8.50
5,000 sq. yds. cement plaster	.35	.50	.30
19,000 lbs. concrete reinforcing	.0465	.05	.06
110,000 lbs. steel and cast iron	.057	.05	.06
7 washout and regulating gates	3,500.00	4,500.00	3,750.00
3 gate houses	2,667.00	1,500.00	1,800.00
Gate keeper's house, lump sum	5,500.00	3,500.00	3,500.00
Hand railing and boom, lump sum	3,550.00	500.00	2,250.00
Transmission line, lump sum	4,725.00	3,600.00	5,000.00
Transformers and other electrical equipment, lump sum	4,500.00	6,516.00	.....
TUNNEL			
40,000 cu. yds. excavating	7.70	8.75	6.40
100,000 ft. B. M. timbering	32.00	15.00	30.00
10,000 cu. yds. concrete	11.23	8.00	11.00
28,000 sq. yds. cement plaster	.42	.40	.40
Totals	$655,225.50	$683,691.00	$666,235.00

CONTRACTS AWARDED

Cedar Rapids, Ia.—Complete railway generating unit, consisting of a 22 and 46x48 heavy-duty, cross-compound engine, receiving steam at 150 lbs. pressure and exhausting into a 26-in. vacuum, direct connected to an 800-kw., 600-volt, 100 r.p.m. generator, to Allis-Chalmers Co., Milwaukee, Wis.

Independence, Ia.—Repairs to light and water plant, to Westinghouse Electric & Mfg. Co., Pittsburg, Pa., $4,733.

Lincoln, Neb.—Addition to Hutton lighting plant, to Geo. E. Tobin, $4,151.—R. C. Ozman, City Clerk.

Pittsburg, Pa.—Two 12,000-h.p. steam turbines and two 200-h.p. turbines for West Pennsylvania Railways Co., to Westinghouse Electric & Mfg. Co., 307 5th st.

Nelson, B. C., Can.—250-kw. motor generator set for Nelson Electric Tramway Co., to Allis-Chalmers-Bullock Co., Montreal.

Winnipeg, Man., Can.—Two 5-ft. valves, Point du Bois hydro-electric development, to Glenfield & Kennedy, Kilmarnock, Scotland, $2,852; 7 turbine governors, to Jens-Orten-Boving & Co., London, England, $23,000.—M. Peterson, Secretary Board of Control.

FIRE EQUIPMENT

Bisbee, Ariz.—Chief Davis has recommended purchase of fire hose.

Phœnix, Ariz.—City will advertise for bids for 1,000 ft. of fire hose.

Alturas, Cal.—Good Government Club has asked for fire engine and establishment of fire department.

Elmhurst, Cal.—Citizens are raising funds for erection and equipment of engine house on Pine st. Address Fire Warden Bell.

Oakland, Cal.—City is considering bond issue for erection of fire houses in annexed districts.

Santa Monica, Cal.—Fire Co. has been formed with A. C. Moffit as President.

Sausalito, Cal.—Volunteer fire department will purchase apparatus.—Albert Jewell, Chief.

Pueblo, Col.—Council has adopted ordinance to send Lighting Committee and City Electrician to Denver to inspect cable system for fire and patrol boxes.

Pueblo, Col.—Council has ordered establishment of hose company in Minnequa Heights.

Steamboat Springs, Col.—Council has ordered purchase of chemical fire engine.

East Hartford, Conn.—Fire District Commissioners are considering establishment of fire equipment near Comstock block.

Greenwich, Conn.—Greenville Fire Co. is considering purchase of auto chemical.

Chester, Ill.—Purchase of chemical truck is being considered.—Bernard Cohen, Chief.

Freeport, Ill.—Cost of erecting and equipping hose house in West Freeport has been estimated at $8,700.—Alderman Houke, Chairman Fire Committee.

Orrin, Ill.—Purchase of engine is being considered.

Roanoke, Ill.—Establishment of fire department has been authorized.—A. L. Roy, Mayor.

Indianapolis, Ind.—Safety Board is considering erection of $40,000 engine house at New Jersey and South sts.

Maysville, Ky.—Town will install paid fire department.

Bar Harbor, Me.—Need of fire equipment is being urged. Address Chief Hamar.

Havre de Grace, Md.—City will petition Legislature for authority to issue $18,000 bonds for erection of firemen's headquarters and further construction of streets.

Brockton, Mass.—Chief Marston has asked for erection of two fire stations and placing of rubber tires on all apparatus.

Haverhill, Mass.—Fire Engineers have recommended purchase of 2,000 ft. of fire hose.

Ludlow, Mass.—Local firemen will purchase hand engine.

Methuen, Mass.—Town is considering erection of fire station and purchase of chemical.

South Attleboro, Mass.—Erection of $15,000 fire station is being considered.

Bay City, Mich.—City is considering purchase of auto engine; also auto for Chief Hardigan.

Spooner, Minn.—Fire company has been organized.—C. B. Minnick, Chief.

Two Harbors, Minn.—City will purchase 500 ft. of fire hose, couplers, rubber mits and nozzles.—S. E. Evans, Purchasing Agent.

Two Harbors, Minn.—Council is considering purchase of auto chemical engine.

St. Louis, Mo.—Councilman Lehmberg has introduced bill in Council to grant franchise for stringing of wires for automatic alarm system.

Springfield, Mo.—Fire Chief McLaughlin will purchase auto fire truck.

Great Falls, Mont.—Bids will be received March 21 for furnishing auto chemical engine.—W. P. Wren, City Clerk.

Omaha, Neb.—Fire Commissioners are considering equipment of two fire houses; combination auto hose and chemical favored.

Scottsburg, Neb.—Bids have been asked for erection of fire headquarters building.

Clayton, N. J.—City will soon erect proposed fire house.

Hackensack, N. J.—Hose Co. No. 5 is considering erection of house; Improvement Commission is considering purchase of $6,500 auto fire truck.

Harrison, N. J.—Town Council will receive bids in April for 2,000 ft. of 2½-in. fire hose.

Irvington, N. J.—Council has decided to purchase $1,800 hook and ladder truck.

Red Bank, N. J.—City is considering purchase of engine.

Rockaway, N. J.—Bids will be received March 17, 7 p. m., for erection of fire house at corner of Main and East New sts.—J. H. Miller, Council Clerk; J. V. King, 22 Clinton st., Architect.

Binghamton, N. Y.—Fire Chief Chas. N. Hogg has recommended establishment of special auxiliary squad, centrally located, equipped with motor propelled engine carrying hose.

Buffalo, N. Y.—Council has authorized the appointment of an architect to prepare plans for engine house on Main st.

Clinton, N. Y.—Erection of fire station in East Clinton is being considered.

Hudson, N. Y.—Fire Commissioners are urging erection of hose house on Academy Hill.

Lestershire, N. Y.—Fire Department needs more hose. Address Fire Chief Banks.

Columbus, O.—Trustees of Columbus State Hospital are willing to donate to city ground at West Broad and Wheatland aves. for erection of engine house.

Columbus, O.—Plans have been tendered Council by Safety Director McCune for proposed new engine house on west side.

East Youngstown, O.—Village is considering purchase of better fire apparatus.—Geo. Montgomery, Village Engineer.

Hamilton, O.—Bids will be received April 6, noon, for $18,000 fire department bonds.—H. A. Grimmer, City Auditor.

Marion, O.—Chief T. J. McFarland has recommended purchase of equipment for fire department.

Uhrichsville, O.—Fire Board is considering purchase of equipment.

El Reno, Okla.—Citizens will vote April 5 on $20,000 for erection of two more fire stations.

Bristol, Pa.—Committee has been appointed by the No. 1 Engine Co. to purchase automobile to be converted into fire apparatus.—Franklin Kilkeson, Chief.

East Greenville, Pa.—Town will erect fire house.

Erie, Pa.—Board of Fire Commissioners will ask for $106,000 for fire department needs during year; improvements include purchase of two chemicals and 4,500 ft. of hose, installation of 12 alarm boxes and change from call system to regular system.

Highspire, Pa.—Town has received bids for proposed engine.

Mt. Carmel, Pa.—Borough of Marion Heights will charter proposed fire company.—T. N. Burke, Solicitor.

New Castle, Pa.—Fire Committee has recommended purchase of auto fire truck.

Perryopolis, Pa.—Town is considering purchase of more chemical apparatus.

Philadelphia, Pa.—City will erect fire tower; cost $10,500.

Willow Grove, Pa.—Fire Co. has decided to purchase emergency wagon which will be used to carry fire hose and buckets.

Pawtucket, R. I.—Purchase of two modern steamers is being considered; cost $10,000.

Providence, R. I.—Fire Company will soon be organized in Marysville, North Providence.

Morristown, S. D.—Volunteer fire department has been organized.—C. R. Hayward, Chief.

Fort Worth, Tex.—City has sold $65,000 fire and police equipment bonds to W. H. Eddleman.

Ophir, Utah.—City will purchase 200 ft. of hose.

Dayton, Wash.—City will purchase fire apparatus.—J. A. Muirhead, Mayor.

Tacoma, Wash.—Bids will be received March 14, 10 a. m., for following supplies: One ladder pipe complete, two 3-way turret nozzles for mounting on wagons, one 3-way deluge set, two cellar pipes, two 4-in. 2-way hydrant gates, 12 Larkin shut-off nozzle tips; 66 8-cone heavy black leather fire hats and 32 pig snout smoke protectors.—H. J. McGregor, Commissioner of Public Works.

Parkersburg, W. Va.—Board of Fire Underwriters has recommended that each station be provided with extra shift of hose and that wagon loaded with 1,000 ft. and turret pipe be kept in reserve; that ladder truck be provided with ladder pipe and deluge set; also that additional fire alarm boxes be installed.

Weston, W. Va.—Purchase of hook and ladder truck and installation of fire alarm system is being considered.

Peterboro, Ont., Can.—Purchase of chemical engine is being considered.

CONTRACTS AWARDED

Phœnix, Ariz.—Hose wagon, to Anderson Fire Supply Co.

Texarkana, Ark.—Combination auto engine, hose wagon and chemical, to Robinson Fire Engine Co., $7,950.

Minneapolis, Minn.—Extensions to Gamewell fire alarm system, to Gamewell Fire Alarm Co., $8,728.

Witmer, Pa.—Chemical engine, to American-La France Co.

BIDS RECEIVED

Moline, Ill.—Fire Station No. 4: Construction—Gust, Ed. & Sons, $9,851; if red slate be used deduct $320; Victor Palmgren, $8,498; Axel Carlson, $9,497; J. E. Anderson, $8,910; if clear slate be used, deduct $250; P. H. Lorenz, $9,656.

Heating—Lockhart Co., steam, $498.70; vacuum, $554.70; Moline Heating & Con. Co., steam, $582; vacuum, $616.

Plumbing—Lockhart Co., $755; Moline Heating & Con. Co., $751.

Electrical Work—Tri-City Electric Co., $260.

ELECTRIC RAILWAYS

Fort Smith, Ark.—Fort Smith & Interurban Railway has been chartered to build 25-mile electric railway between Greenwood, Bonanza and Fort Smith; capital stock $100,000.—George Sevgel, city, President.

Vallejo, Cal.—Vallejo Traction Co. has been granted franchise to build and operate railroad from water front to White Sulphur Springs.—H. M. Meacham, President; Theodore A. Bell, Secretary.

Washington, D. C.—Commissioners have decided to make favorable report on bill to extend charter of East Washington Heights Suburban Traction Co.

Atlanta, Ga.—Georgia Railway & Electric Co. has been granted three 40-year franchises and one perpetual franchise for new lines.

Brunswick, Ga.—City & Suburban Railway will build an extension to connect its line on Albany and Newcastle sts.—T. D. Aiken, General Manager.

Cairo, Ill.—Illinois Oil and Coal Belt Railway has been incorporated to construct line connecting Terre Haute, Ind., and this city; capital $1,000,000. James R. Campbell, McLeansboro; Isaac H. Webb, McLeansboro; Carrol C. Boggs, Fairfield; Aden Knoph, Olney; Joseph B. Crowley, Robinson, incorporators.

Charleston City, Ill.—Franchise has been granted the Mattoon City Railway Co. for construction of electric line extending from city to Paris.—Chas. H. Cox, General Manager.

Crete, Ill.—Chicago Heights Street Railway Co. is considering extension of line from Chicago road to Crete.

Springfield, Ill.—Springfield Traction Co. has been incorporated to construct electric railroad from Springfield through counties of Sangamon and Christian, to Pana, and from Springfield through counties of Sangamon, Montgomery and Fayette to Vandalia.—Ernest H. Helmle, George B. Gillespie, A. M. Fitzgerald and George Riordan, all of Springfield, and C. E. Hazlett, of Rochester, Incorporators.

Elkhart, Ind.—H. E. Bucklen is planning to extend St. Joseph Valley Railroad line from Angola to either Pioneer or Montpelier, O.

Indianapolis, Ind.—Irvington citizens are urging extension of English ave. car line.

Vincennes, Ind.—J. D. La Croix is interested in promotion and completion of interurban line between this city and Bridgeport.

Valley Junction, Ia.—Citizens will vote March 28 on granting franchise to Des Moines-Sioux City electric road.

Kansas City, Kan.—Mayor U. S. Guyer has instructed City Councillor L. W. Keplinger to take steps to force Metropolitan Street Railway Co. to build car line from 13th st. and Minnesota ave. to 18th st. and Muncie blvd.

Louisville, Ky.—Louisville Railway Co. is preparing to take definite steps to improve 4th ave. line and the Preston, Main and 18th st. line.

Shreveport, La.—Shreveport Traction Co. has applied for franchise for extension to Fairfield ave. suburb.

Annapolis, Md.—Legislature is considering bill to incorporate Washington, Marlboro & Drum Point Railway, Power & Light Co., which proposes to construct electric railway in Prince George and Calvert

counties, Maryland, starting at Drum Point. C. A. M. Wells, William C. Carroll, Charles C. Mayer, Reese Carpenter, H. Magruder, F. C. Carmody, E. A. Fuller and G. F. Owens are interested.

Hagerston, Md.—Directors of electric railway between Waynesboro and Chambersburg are considering extending line from Pen-Mar over mountain to Blue Ridge Summit and Monterey.

Ironwood, Mich.—A. E. Appleyard, of Boston, and H. P. Harmon, of Portland, Me., are considering purchase of street railway, electric lighting and water companies operating in this city and at Hurley; electric railway, connecting Ashland and the Gogebic range, may be built.

Minneapolis, Minn.—Construction will be forwarded in the spring by Twin City & Lake Superior Railway Co. on electric air line to Duluth.—L. N. Loomis, President.

Kansas City, Mo.—Metropolitan Street Railway Co. will soon place contracts for building three miles of single track.—W. W. Wheatley, General Manager.

Kansas City, Mo.—Oak st. residents are urging extension of Main st. car line down that st.

Unionville, Mo.—Unionville Commercial Club is interested in extension of interurban railway from Kirksville to this city.

Fremont, Neb.—Council has granted railway franchise to Nebraska Transportation Co.

Clinton, Okla.—Clinton Street Railway Co. will change its method of operation from gasoline to electric motive power and will purchase necessary supplies and material, including electric cars, for the conversion.—H. Smith, President.

Enid, Okla.—Citizens have voted to grant two street railway franchises; one gives C. H. Besler and J. J. Hall the right to operate system through this city and into East Enid, returning on East Broadway line; other gives J. A. Spalding right to build and operate line to North Enid.

Beaver Falls, Pa.—Ordinance granting New Castle-Beaver Valley Street Railway Co. right to lay its tracks and operate cars through borough has passed final reading.

Monaca, Pa.—Council has extended franchise of proposed Monaca and Ambridge Street Railway Co.; work will begin with opening of spring.

Pottstown, Pa.—Pottstown & Reading Electric Railway has begun work on extension from Sanatoga to Royersford via Linfield.

Chattanooga, Tenn.—Council has passed ordinance granting Chattanooga Railway & Light Co. authority to lay additional tracks besides constructing cross-overs.

Memphis, Tenn.—The Union Land & Improvement Co. will extend the new Raleigh road street car line to its property. E. B. Le Master is interested.

Greenville, Tex.—Citizens are working for up-to-date street car system; company at Dayton, O., proposes to build five miles of street car line, equip with up-to-date cars, etc., for bonus of $40,000.

Clarksburg, W. Va.—Clarksburg & Weston Traction Co. has been organized for the purpose of building trolley line from Clarksburg to Weston.

Fairmont, W. Va.—Fairmont & Pittsburg Railway Co. has been chartered, capital stock $1,000,000, to build electric railway from Fairmont to Blackville, in Monongalia County, then to Waynesburg and Pittsburg; same company will build an electric line from Fairmont to Mannington.—William L. Laws, Jersey City, N. J.; H. F. Smith, J. R. Linn and S. E. Miller, Fairmont, and J. F. Beatty, Mannington, Incorporators.

Morgantown, W. Va.—Sabraton Railway Co. will apply for franchise to extend its line from Sabraton to Dellslow, thence to Tyrone, Stewartstown and Cheat River resorts.

Wellsburg, W. Va.—Wellsburg, Bethany & Washington Railway will apply for the right to extend its electric railway in city.—Jos. West, General Manager.

Portage, Wis.—Council has granted a franchise to the Chicago & Wisconsin Railroad company to pass through city and to install local street car line.

London, Ont., Can.—London & Lake Erie Railway & Transportation Co. has been granted charter for line from Brantford to London.

Niagara Falls, Ont., Can.—Queenston-Niagara Electric Railway Co. has been organized to construct electric railway between Queenston and Niagara-on-the-Lake, distance seven miles.

CONTRACTS AWARDED

Washington, N. J.—Extension for Easton & Washington Traction Co., to M. P. McGrath Contracting Co., 409-410 Trust Bldg., Easton.—W. O. Hay, Easton, Manager.

Albuquerque, N. M.—Street railway for Citizens' Traction & Power Co., to J. H. Barrett, Pittsburg, Pa.—A. W. Hayden, President.

BRIDGES

Corning, Ark.—T. J. Crowder and B. McKinney have been appointed as Bridge Commissioners to prepare plans and specifications for bridge across Black River at Bennett's Ferry.

Hartford, Conn.—Council is planning the construction of bridge over Farmington ave.; cost $18,000.

New Haven, Conn.—Saybrook Commission will at once ask bids for erecting proposed bridge; cost $50,000.

Atlanta, Ga.—City Engineer R. M. Clayton has prepared plans for construction of bridge 100 ft. long across railroad tracks on Bellwood ave.; cost $35,000.

Joliet, Ill.—Elgin, Joliet & Eastern Railway officials will be notified by Highway Commissioners to proceed with work of constructing Jackson st. viaduct.

Hartford, Ind.—County Commissioners are considering constructing two bridges over Salamonie River.—W. H. Bladders, Portland, Engineer.

Kansas City, Kan.—Wyandotte County Commissioners have abandoned intention to put two spans in West Kansas ave. bridge as work could not be done before flood time.

Elizabethtown, Ky.—County Commissioner William C. Montgomery will let contracts in spring for construction of bridge over Salt River at West Point.

New Orleans, La.—Railway Co. and New Orleans Terminal Co. will combine to have erected viaduct crossing eight tracks of Terminal Co.; cost about $25,000.

Duluth, Minn.—Canadian Northern Railway will reconstruct Oneida st. bridge.

Magnolia, Miss.—Pike County Board of Supervisors has decided to use tile culverts and small concrete bridges in connection with proposed construction of sand-clay roads.—Xavier A. Kramer, Engineer.

Closter, N. J.—Architect M. C. Pittman, New York City, has prepared plans for bridges at this place.

Hackensack, N. J.—Question of a new bridge over brook at Arcola is now up to authorities of Saddle River and Midland.

Hoboken, N. J.—Assemblyman Mark Sullivan's bill to give Hudson Freeholders more money to complete Hoboken viaduct to Jersey City Heights has passed House.

Binghamton, N. Y.—Plans are being made by County Superintendent of Highways Charles Van Amburg and Town officials of Chenango and Fenton for early replacing of bridges at Chenango Bridge and Kirkwood.

Wilmington, N. C.—Erection of steel bridge across North East River at Castle Hayne is being considered.

Grand Forks, N. D.—Grand Forks County Commissioners have rejected all bids received for construction of bridges; bids will be soon readvertised.

Cleveland, O.—Council has passed ordinances for repairing the Superior and Central viaducts; cost $18,000 and $25,000, respectively.

Hamilton, O.—Butler County Board of Commissioners is considering constructing bridge across the Miami and Erie Canal, at Grand blvd.; also a bridge at Heaten and High sts.; cost about $10,000.

Lima, O.—Erection of concrete bridge over shawnee River, cost $12,000, is being considered. Address City Engineer Metheany.

Shawnee, O.—City Engineer A. L. Methany is preparing plans for construction of the new bridge over Ottawa River.

Toledo, O.—County Commissioners have decided to build automobile bridge over canal at Detwart ave.; cost $1,000.

Atoka, Okla.—Missouri, Kansas, Texas Railway will construct concrete arches and steel bridges in connection with double-tracking from Atoka to Limestone Gap.—S. B. Fisher, St. Louis, Mo., Chief Engineer.

Francis, Okla.—Frisco Railroad is considering erection of bridge over Main st. tracks.

Purcell, Okla.—Company known as Purcell-Lexington Bridge Co. has been organized and proposes to construct modern bridge across South Canadian River between Purcell and Lexington.—W. G. Blanchard, President.

McKees Rocks, Pa.—Council has passed ordinance permitting the Pittsburg, Chartiers & Youghiogheny Railroad to construct bridge over tracks of Pittsburg Railways Co. in Chartiers ave. and another at Andrew st.; total cost $125,000.

Rochester, Pa.—Borough Engineer James P. Lear and Engineer Minton of the Pennsylvania lines, have prepared plans pertaining to elimination of New York ave. railroad crossing; overgrade bridge favored.

Scranton, Pa.—City, Delaware & Hudson Co. and American Railways Co. will construct viaduct at Mulberry st.; total cost $240,000.—John von Bergen, Jr., Mayor.

West Chester, Pa.—Chester County Commissioners have decided to build two new bridges, one over Valley Creek, on Old King rd., in East Caln Township, and the other over White Clay Creek, on road from Landenberg to Chesterville.

Sumter, S. C.—Sumter County Commissioners are considering 50,000 bond issue for building and maintaining bridges and roads.

Cleburne, Tex.—Johnson County Commissioners are considering construction of a substantial steel or concrete bridge over the Nolan River at Granbury Road Crossing.

El Paso, Tex.—Plans have been drawn by J. L. Campbell for concrete bridge from this city to Juarez.

Orange, Tex.—Orange County Commissioners have decided to replace all small wooden bridges in county with metal culverts.

Salt Lake City, Utah.—Assistant Engineer of Streets John Duder has recommended erection of reinforced concrete arch bridge over City Creek Canyon at 6th ave.

Spokane, Wash.—Residents of West Spokane are considering installation of bridge over Hangman Creek; Assistant City Engineer Phillips has figured cost of four types of full-size bridges, namely, $160,000 for a steel viaduct, $314,000 for reinforced concrete, $316,000 for concrete arch, and $278,000 for earth fill with two culverts for creek to run through.

Parkersburg, W. Va.—Wood County County Court has selected Farris Engineering Co., Pittsburg, Pa., to prepare plans for proposed new bridge across Little Kanawha River, at foot of Kanawha st.

Parkersburg, W. Va.—Council has passed ordinance for construction of bridge across Worthington Creek.—Frank Good, City Auditor.

Brockville, Ont., Can.—Ratepayers will vote on a $16,000 by-law for bridges.

New Westminster, B. C., Can.—Residents of Annacis Island are urging construction of $40,000 bridge to connect their island with Lulu Island.

Vancouver, B. C., Can.—City is considering construction of bridge over Narrows to connect Vancouver and North Vancouver.

CONTRACTS AWARDED

Madera, Cal.—Building bridge over north and south forks of San Joaquin River, to Pacific Construction Co., at $14,987; Western Bridge & Construction Co., $16,384; Mervy Elwell Co., $17,840; Burrell Bridge & Construction Co., $18,000; Cotton Bros. & Co., $17,070; Hyde, Harjes & Co., $17,365; Healy, Tibbitts & Co., $16,487.

Topeka, Kan.—Becker bridge over Big Muddy Creek, to Brookville Bridge Co., $987.

Duluth, Minn.—Reinforced concrete bridge over Fischers Creek on Superior st., bids opened Feb. 18, to Geo. H. Lounsberry, city, for $20,070.

Carlsbad, N. M.—Two county bridges, to Midland Bridge Co., Kansas City, Mo., $7,200.

New York, N. Y.—Furnishing and delivering lumber to Harlem River bridges, to Arthur C. Jacobson & Sons, 81 Bainbridge st., Brooklyn, $4,915.

Laurinburg, N. C.—Constructing 7 reinforced concrete highway bridges for Stewartville Township, to Owego Bridge Co., Owego, N. Y., for about $13,500.

Rome, O.—Constructing superstructure of bridge over Rock Creek, to the Capitol Construction Co., of Columbus.

Miami, Okla.—Bridge over Tar Creek, 4th st., to Illinois Steel Bridge Co., of Kansas City, Mo., $5,995.

Brenham, Tex.—Iron bridge across Indian Creek, in town of Burton, to M. S. Hasie, Jr., Dallas; cost $1,080.

Salt Lake City, Utah.—Reinforced concrete conduits in Parley's Creek, 12th st. South, to Moran Construction Co., $6,088.98.

Parkersburg, W. Va.—Worthington Creek bridge, to Farris Bridge Co., Pittsburg, $3,000.—W. B. Pedigo, Mayor.

Winnipeg, Man., Can.—New superstructure for Louise Bridge, to Algoma Steel Bridge Co., city, $124,450; pile bridge over Omand's Creek, to City's Engineer of Construction, $3,205.72.—M. Peterson, Secretary Board of Control.

BIDS RECEIVED

Los Angeles, Cal.—County bridges: For pile trestle bridge across Rio Hondo on Whittier road, C. W. Corbaley, $3,820; Mercereau Bridge & Construction Co., $4,473; and T. W. Young, $7,420; for two shorter bridges on Saugus-Ventura road, C. W. Corbaley, $1,843; and Mercereau Bridge & Construction Co., $1,995.

Nashua, N. H.—Rebuilding bridge across Pennichuck brook: Boston Bridge Works, $38,692; United Construction Co. of Albany, $42,919; New England Structural Co. of Boston, $44,000; Canton Bridge Co. of Albany, $46,629.

MISCELLANEOUS

Huntsville, Ala.—Citizens have defeated proposed issue of $20,000 of bonds for purchase of Calhoun property and $30,000 of bonds for erection of city hall.

Mobile, Ala.—Local architects are preparing plans for remodeling and repairing municipal building; cost about $25,000.

Montgomery, Ala.—Plans for building destructor plant for refuse of city are under discussion by city officials.

Camden, Ark.—Theodore M. Sanders, Little Rock, will prepare plans and specifications for proposed hospital.

Alturas, Cal.—Good Government Club has asked authorites to provide some means to prevent inundation of streets by waters from Pit River.

Oakland, Cal.—Bids will be received about April 1 for $1,736,000 bonds for water front improvements.—F. C. Turner, City Engineer.

Sacramento, Cal.—Board of City Trustees has recommended rejection of bid of Finch Jail and Metal Works for elevator for city hall; cost $10,460.

San Francisco, Cal.—Residents of Richmond district are agitating placing of street signs at intersections of thoroughfares.

Pueblo, Col.—Street and Bridge Committee will go to Denver to inspect street washers.

New Haven, Conn.—Bids will be received Mar. 14 for erecting city supply house, stables, sheds, etc.—Foote & Townsend, 902 Chapel st., Archts.—C. W. Kelly, City Engineer.

Chicago, Ill.—Bids will be received by Commissioners of Lincoln Park, Clark and Center sts., March 23, for construction of 4,000 ft. of concrete or stone breakwater.—H. West, Secretary.

Muncie, Ind.—Board of Works will at once purchase street sweeper.

Des Moines, Ia.—Council has approved plans for pavilion in South Park; cost $2,000.

Kansas City, Kan.—Architect W. E. Harris is preparing plans for $5,000 shelter house for Park Commissioners.

Winchester, Ky.—City has sold city hall bond issue to M. T. McEldowney.

Dracut, Mass.—Town will vote on warrants for improvements.

Gloucester, Mass.—Architect E. L. Phillips has prepared plans for addition to City Home.

Haverhill, Mass.—City will sell $156,000 bonds for purchase of street sprinklers, improvement to city hall and permanent works on streets.

Haverhill, Mass.—Mayor Moulton has decided that the watering of streets for year should be done by city and by use of watering carts, instead of by contract with the use of car sprinklers by a Worcester company, as was under consideration.

Holyoke, Mass.—Board of Public Works plans to purchase one tar sprinkler and will install large gas retort at gas works.

Lawrence, Mass.—Board of Aldermen has adopted order authorizing borrowing of $500,000 for public improvements.

Malden, Mass.—Finance Committee is considering $1,500 appropriation for equipment of various public playgrounds.

New Bedford, Mass.—Councilman Hamel has been appointed chairman of committee to consider establishment of ambulance in north end of city.

West Newbury, Mass.—Town will vote on number of warrants for improvement.

Rochester, N. H.—Commissioners will investigate and recommend estimate of cost of sprinkling streets.

Atlantic City, N. J.—Mayor Franklin P. Stoy has recommended establishment of pavilions and public comfort stations in Chelsea district; establishment of recreation parks or playgrounds and official municipal action looking toward deeper inlet.

Atlantic City, N. J.—City Electrician Al. Farrand has recommended placing of wires underground, and that signs be placed on corners where there are no fire alarm boxes indicating nearest boxes.

Burlington, N. J.—Erection of city hall has been ordered.

Garwood, N. J.—Erection of borough hall is being considered.

Mauricetown, N. J.—Residents of this place are interested in proposed construction of electric line between West Millville and Port Morris.

Brooklyn, N. Y.—City Controller Prendergast has recommended $188,700 appropriation for construction of new pier near foot of 30th st.

Buffalo, N. Y.—Buffalo Extractor Corporation has been incorporated with $50,000 capital stock and O. H. A. Wannenwetsch, A. C. Lembke and R. T. G. Liesinger as directors, to build and operate garbage disposal plants.

Columbus, O.—City Engineer Maetzel will have plans ready about March 15 for $40,000 stable building to be erected at sewage disposal plant.

East Youngstown, O.—Village Council is considering erection of city building.—Ovidius De Fogarassey, Chairman Committee.

Toledo, O.—Safety Director J. J. Mooney has advocated erection of new workhouse on University Farm.

Enid, Okla.—Citizens have voted $5,000 bonds for construction of jail.

Muskogee, Okla.—Land to the value of $115,000 has just been secured by city for park purposes.

Oklahoma City, Okla.—City has invited bids on erection of first wing of hospital.—W. C. Burke. City Engineer.

Portland, Ore.—Council has passed ordinance appropriating $100,000 to be expended by Board of Health in establishment of garbage crematory.

Altoona, Pa.—Councils will be asked to appropriate $16,000 for purpose of street cleaning this year.

Beaver Falls, Pa.—Bids will be received at once for garbage collector.

Erie, Pa.—Widening of State st. causeway leading to public dock is being urged.

Erie, Pa.—Mayor M. Liebel, Jr., has recommended that appropriation be placed at disposal of Committee on Garbage Matter for obtaining plans and estimates on system of garbage collection and disposal.

Fountain Hill, Pa.—Borough Engineer has presented plans and specifications for proposed new Council chambers, hose house and lockup.

Philadelphia, Pa.—City Architect Powell has prepared plans for erection of police station, fire house and patrol garage at 319 Race st.

Providence, R. I.—Committee on Public Comfort Station is considering plans by Hindle & Wright for waiting room and comfort station for Market sq.

Dallas, Tex.—Citizens will vote on $100,000 city hospital bonds.

Dallas, Tex.—Board of Municipal Commissioners is urging establishment of at least one adequately equipped sanitary closet and lavatory system in downtown district; cost $5,000 to $10,000.—D. F. Sullivan, Commissioner.

Salt Lake City, Utah.—L. H. Krebs, assistant in charge of sewers and drains, has recommended erection of residence for Engineer at intercepting sewer pumping station.

Newport News, Va.—City has plans prepared for erection of additional story on rear half of jail.—T. E. Pearce, City Engineer.

Spokane, Wash.—North Hill Improvement Club will urge establishment of two parks.

Edmonton, Alta., Can.—Department of Public Works has asked for tenders for supply of whole or any part of required estimate of material for telephone construction.—John Stocks, Deputy Minister.

Ottawa, Ont., Can.—City Engineer Ker has prepared following estimates: Repairing pavements, $10,000; road maintenance and repairs, $30,000; new macadam roads, $20,000; bridge repairs, $3,600; concrete walks, $3,000; plank walks, $2,000; sewer main, $5,000; renewing old services leaks, thawing, etc., $10,000; laying new services, $15,000; renewing and repairs to hydrants, $3,500, and old aqueduct improvements, $4,000.

Chihuahua, Mex.—City will construct 15-ton garbage crematory.

CONTRACTS AWARDED

Waterbury, Conn.—Collection and disposal of garbage for one year from April 1, bids opened Feb. 28, to H. M. Rigney, city, $22,499.

South Bend, Ind.—Police uniforms, to Jas. H. Hirsch Co., Chicago.

Lexington, Ky.—Collecting garbage and running crematory, to Shelby, Muller & Co., $4,997.50; two other bidders.

Minneapolis, Minn.—Sixty Dean voting machines, to Empire Ballot Machine Co., $700 each.

Harrison, N. J.—Removing garbage and ashes from the streets for three years, to Michael Sabia, $9,450; John Penzlack, $11,050; George Fixture, $10,500, and Antonio Saporito, $12,150.

Albany, N. Y.—State st. pier improvement, to John Dyer, Jr., $96,166.

Mount Vernon, N. Y.—Garbage removal, to Frank Nordone, $37,500.

Rochester, N. Y.—Two electric trucks, to Rochester Railway and Light Co., $2,200 each.

Aspermont, Tex.—Erection of jail, to J. L. Dewes.

Winnipeg, Man., Can.—Three squeegee street washing machines, to Mussens Ltd., city, $4,915; 25,000 bbls. cement, to W. F. Lee, city, $64.06 per 100 lbs. ex. sacks.—M. Peterson, Secretary Board of Control.

BIDS RECEIVED

San Diego, Cal.—Three water flushing machines, Theodore F. Snyder, lowest bidder, $3,270; Lyons Implement Co., $3,597; Frank Salmons, Street Superintendent.

Wilmington, Del.—Remodeling old pumping station into office building: William D. Haddock & Co., $19,967; A. S. Reed & Bro. Co., $20,578, and John E. Healey, $21,980.

Des Moines, Ia.—Erecting market house, plans by Wetherell & Gage, 202 Youngerman Bldg; Chas. Weitz Sons Co., $21,374; C. W. Ennis, $21,703; J. E. Toussaint, $22,853; J. E Lovejoy, $22,900; G. A. Butcher, $24,956.

Beaver Falls, Pa.—Furnishing garbage collection wagon: J. M. Blakeland Co., Buffalo, N. Y., one horse wagons, $150, $165 and $180; two horse wagon, $225, with an extra charge of $20 for metal covers; Haywod Wagon Co., one horse wagon, $200; two horse wagons, $225, 250 and $275; Studebaker Co., South Bend, Ind., $113.75, $225, $240, $290, $332.50, and $350.

Lynchburg, Va.—Garbage incinerator: Morse-Boulger Destructor Co., New York City, $23,000; Decarie Incinerator Co., Minneapolis, Minn., $23,000; Public Works Engineering Co., Portland, Ore., four propositions, ranging from $17,934 to $21,170; Dixon Engineer and Contracting Co., Toledo, O., two bids, $15,470 and $14,880.

TOO LATE FOR CLASSIFICATION

STREET IMPROVEMENTS

San Anselmo, Cal.—City has sold $40,000 improvement bonds; repair work on local streets will be commenced at once.

Ocean Park, Cal.—Paving of 2d st. and Paloma ave. with asphalt is being considered.

Delaware City, Del.—Bids will be received April 4, 11 a. m., for construction of 1,934 sq. yds. macadam roads and 3,777 sq. yds. granolithic sidewalks at Fort Dupont.—Address Constructing Quartermaster.

Dover, Del.—Levy Court, President Sharp, will spend $25,000 on good roads.

Lewiston, Ida.—Council has directed preparation of plans for improvement of E. Main st.; cost approximately $5,000.

Benton, Ill.—City will expend $60,000 for paving work.—A. S. Cleveland, Chairman Local Improvement Committee.

Bluffton, Ind.—Wells County Commissioners will soon ask for bids for construction of 7920 ft. of crushed stone road.

Hebron, Ind.—County Commissioners are considering construction of gravel road in Portage and Westchester townships; length, 2½ miles.

Corning, Ia.—Citizens will vote in spring on paving question.

Lake Charles, La.—Council has instructed City Engineer to prepare plans and specifications for constructing about 5 miles of sidewalks.

Minneapolis, Minn.—Bids will be received March 21, 11 a. m., for grading road No. 83 and graveling Road No. 23.—H. R. Scott, County Auditor.

Hancock, Mich.—Council has decided to pave Hancock st.; cost $25,000.

Grant City, Mo.—Citizens have voted $3,000 sidewalk improvement bonds.

Independence, Mo.—Bids will be received March 22 for grading and draining three roads, cost $22,245.—S. A. Boyer, Kansas City, Clerk, Jackson County.

St. Joseph, Mo.—Board of Public Works has adopted ordinances providing for paving of portions of three streets.

Clarksboro, N. J.—Taxpayers are discussing laying of cement sidewalks from Mt. Royal to Mickleton, distance two miles.

Trenton, N. J.—Council is considering resolutions asking bids for repairing asphalt pavements and compelling Sixth Ward residents to pave sidewalks.

Binghamton, N. Y.—Board of Aldermen is considering ordinance requesting Public Service Commission to eliminate Robinson st. crossing; also laying brick pavement on Washington st.

Lockport, N. Y.—Paving of lower Market st. is being considered.

Akron, O.—City Engineer John W. Payne has estimated cost of paving portion of Edgewood ave. at $41,000.